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MARQUESAN SOMATOLOGY WITH COMPARATIVE NOTES ON SAMOA AND TONGA

By Louis R. Sullivan

BASED ON THE FIELD STUDIES OF E. S. CRAIGHILL HANDY AND WILLOWDEAN C. HANDY

p.

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By LOUIS R. SULLIVAN
Based on the Field Studies of E. S. Craighill Handy and Willowdean C. Handy

INTRODUCTION

Acknowledgments

114 THE field studies which form the basis of this paper were made by E. S. Craighill Handy in conjunction with his ethnological survey of the Marquesas. In the field Mr. Handy was ably assisted by his wife, Willowdean C. Handy. Ralph Linton assisted in the photography. By arrangement between the American Museum of Natural History and the Bernice P. Bishop Museum the field notes were turned over to me for analysis and interpretation. The mathematical computations were prepared by Mrs. Lois Treadwell Ruml and my wife, Bessie P. Sullivan, who also prepared the appendix and assisted throughout the preparation of the manuscript.

The somatological studies in the Marquesas followed the plan of those already completed for Samoa[1] and Tonga.[2] In addition to the somatological records Mr. Handy supplied me with full and valuable notes on the history of the population, opportunities for intermixture with whites and Asiatics, and customs of deformation of parts of the body. I am likewise indebted to him for valuable suggestions as to possible inter-island differences in culture and physical type which made my analysis much easier. The comparative data from Samoa and Tonga were furnished by the field studies of E. W. Gifford and W. C. McKern, acknowledged in previous papers.

The Population

124 The material submitted for study consisted of the records of 201 persons. When the admitted mixed-bloods, senile and adolescent individuals were eliminated there remained two series consisting of 84 adult men and 74 adult women. Three persons with a small amount of Hawaiian blood were included in the analysis. By nativity the individuals examined were distributed as follows: Nuku Hiva 18, Ua Huku 18, Ua Pou 47, Hiva Oa 61, Tahu Ata 2, and Fatu Hiva 12. The material was not selected and represents persons of all social classes and occupations. It may be regarded as a fair qualitative sample of the Marquesan people of today. Incidentally the 201 persons represent about 11 per cent of the total population.

[1] Sullivan, Louis R., A contribution to Samoan somatology: B. P. Bishop Mus. Mem. vol. VIII, No. 2, 1921.

[2] Sullivan, Louis R., A contribution to Tongan somatology: B. P. Bishop Mus. Mem. vol. VIII, No. 4, 1922.

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161 The story of the Marquesan population is the story of the Hawaiian and other Polynesian populations. From the data in Table I, supplied to me by Handy, it will be seen that in the course of the last 150 years the estimated population has shrunk from about 100,000 to less than 2,000. Handy says:[5]

164 The condition of the health of the modern Marquesan is most distressing. I speak without exaggeration when I say that I doubt if there is a wholly sound physical specimen of a Marquesan alive. The principal diseases that are rampant are leprosy, syphilis, elephantiasis, a very rapid wasting pulmonary tuberculosis called *pokoko*, tubercular trouble in the throat, glands, and intestines, and deep ulcers and carbuncles. Dental caries is common.

144 167 In view of the theories of a Caucasoid origin of the Polynesian peoples it is likewise very desirable to keep clearly in mind the possibilities and probabilities of modern intermixture.

From 1800 to 1838 there were only a few deserters from whalers. In 1838 the Catholic missionaries arrived and the French took possession of Nuku Hiva, Ua Pou, and Ua Huka. A small French colony with a maximum population of 100 was established. The white population probably never exceeded 100 in the whole group. Today it consists of about a dozen Catholic fathers and sisters and about twenty others. In 1880 a group of Cantonese Chinese were brought into the islands. It is probable that there were never more than 100 in the islands. There are now about thirty. Native women used to marry freely with the Chinese but the intermarriage ceased about ten years ago. The reason for the number of part Chinese today is not the number of Chinese immigrants, but the fact that the half-Chinese are sturdy, healthy, and good breeders. They resist the diseases that take off the natives and half whites.

[186] Another point of interest is Handy's statement to the effect that the Marquesans are very accurate in remembering ancestry and as a general thing showed neither desire to conceal nor to boast of white blood if they had it. It is not a matter either for pride or shame. The amount of unadmitted modern white blood in our series is very probably negligible.

161 162 TABLE I.—THE POPULATION OF THE MARQUESAS

DATE OF CENSUS	ESTIMATED POPULATION
1. Prehistoric:	Estimated to have been between 50,000 and 100,000, fluctuating with periods of plenty and famine.
2. 1773:	Cook estimated 50,000 for three southeastern islands. About 100,000 for the entire group.
3. 1804:	Krusenstern estimated 16,000 for Nuku Hiva. About 50,000 for entire group.
4. 1838:	Dupetit-Thouars estimated 20,000 for the entire group.
5. 1856:	Jouan estimated 12,500 for entire group.
6. 1867:	Lawson manuscript gives 7,411 for entire group.
7. 1884:	Clavel estimated 4,865 distributed as follows:

[5] Personal communication.

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	Men	Women	
Nuku Hiva	524	456	
Ua Huka	105	84	
Ua Pou	196	180	
Fatu Hiva	321	318	
Tahu Ata	260	260	
Hiva Oa	1,116	1,045	
Total	2,522	2,343	4,865

8. 1905: Pacific Islands Pilot gives 3,500.
9. 1922: Estimated roughly at 1,800.

Method

All measurements were taken in accordance with the regulations of the International Agreement. In outline the measurements were as follows:

Anthropometric characters

1. Stature: recorded to the nearest centimeter (shoes removed).
2. Shoulder height: same position as in 1.
3. Arm length: acromion to tip of middle finger.
4. Height sitting.
5. Arm reach or span: maximum.
6. Head length: glabella to opisthocranium.
7. Maximum head width.
8. Minimum frontal diameter.
9. Maximum face width: bizygomatic.
10. Bigonial diameter at the angles of the mandible avoiding as much of the muscles as possible.
11. Anatomical face height: nasion to gnathion.
12. Nasal height: nasion to subnasal.
13. Nasal width: alare to alare avoiding pressure.
14. Physiognomic ear length or height.
15. Physiognomic ear breadth.

Indices

16. Relative shoulder height $= \left\{ \frac{\text{Measurement No. 2} \times 100}{\text{Measurement No. 1}} \right.$
17. Relative arm length $= \left\{ \frac{\text{Measurement No. 3} \times 100}{\text{Measurement No. 1}} \right.$
18. Relative sitting height $= \left\{ \frac{\text{Measurement No. 4} \times 100}{\text{Measurement No. 1}} \right.$
19. Relative arm reach or span $= \left\{ \frac{\text{Measurement No. 5} \times 100}{\text{Measurement No. 1}} \right.$
20. Cephalic or length-breadth index $= \left\{ \frac{\text{Measurement No. 7} \times 100}{\text{Measurement No. 6}} \right.$
21. Transverse fronto-parietal index $= \left\{ \frac{\text{Measurement No. 8} \times 100}{\text{Measurement No. 7}} \right.$
22. Transverse cephalo-facial index $= \left\{ \frac{\text{Measurement No. 9} \times 100}{\text{Measurement No. 7}} \right.$

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141 23. Zygomatico-frontal index $= \left\{ \frac{\text{Measurement No. 8} \times 100}{\text{Measurement No. 9}} \right.$

24. Zygomatico-mandibular index $= \left\{ \frac{\text{Measurement No. 10} \times 100}{\text{Measurement No. 9}} \right.$

25. Anatomical facial index $= \left\{ \frac{\text{Measurement No. 11} \times 100}{\text{Measurement No. 9}} \right.$

26. Nasal index $= \left\{ \frac{\text{Measurement No. 13} \times 100}{\text{Measurement No. 12}} \right.$

27. Physiognomic ear index $= \left\{ \frac{\text{Measurement No. 15} \times 100}{\text{Measurement No. 14}} \right.$

122 141 Through a series of accidents Handy was not supplied with a stature rod until near the conclusion of his studies. He used a makeshift apparatus consisting of a pole and a tape. While the measures were taken with the greatest care Handy suggests that the body measurements may not be strictly comparable with other studies but are valuable for intra-group comparison. I had no opportunity to do field work with Handy, but he was trained in anthropometic technique by Professor E. A. Hooton, whose technique is for the most part similar to my own and that of Gifford and McKern. It is possible but not altogether certain that Handy located the nasion at a point lower than Gifford, McKern and I did. This possibility should be borne in mind in comparative studies on facial height and nasal height.

The anthropometric data were supplemented by observations on characters not quantitatively measurable or attribute characters. The conceptions held and the standards used for this part of the field work have been discussed in detail in a previous paper of this series.[4] It is sufficient to say that such characters were described in terms of their total range in mankind. It is obvious of course that their chief value lies in their utility for intra-group studies. Only the most general comparison can be made with the studies of other students. Hair samples and photographs of the individuals studied were submitted with the records. These enabled me to gauge the differences in the conceptions as given by Handy, Gifford, McKern, and myself. The most important difference is in our standards for hair form. Handy had a tendency to class hair form about two degrees higher than I would have done in the scale of waviness or curliness. In particular he used curly in the popular sense, whereas I reserve this term for a very particular and rare form of hair. This does not imply that Handy is wrong and that I am right. It is most probable that I somewhat minimize the degree of curliness and that Handy somewhat magnifies it. In regard to women who have longer hair our views are more nearly in accord.

[4] B. P. Bishop Mus. Mem. VIII, 4, 1922.

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DESCRIPTION OF THE MARQUESANS

While we have many verbal descriptions of the Marquesans by travelers and writers, anthropometric data are extremely rare and confined almost wholly to the cranium. Information on stature was furnished by several of the early explorers of this region, but the conclusions are not always in accord. Deniker gives the average stature of 202 men as 174.3 centimeters. The cranial length-breadth index is given by the same author as 76.4 for thirty crania. Broca's figures for the same index are 75.0 for men and 78.2 for women.

Some of the larger of our craniometric publications have described Marquesan crania. Davis described 29 of them, the German catalog 5, the Godeffroy catalog 4, Welcker 16, and Le Batard 24. Le Batard gave also the principal head measurements of 2 persons. Von Luschan also described some Marquesan skeletal material. It is apparent that the present contribution of detailed observations on 84 men and 74 women can in no sense be considered a duplication of work already done.

The results of the seriation and averages are summarized in Tables II, III, and IV. Table II is given as a gauge of the homogeneity of the series. While a series of less than 100 does not lend itself to strict statistical analysis it should show some tendency to form a normal frequency distribution for a majority of characters, if we are dealing with a homogeneous group. But such is not the case. The bimodality encountered in the Tongan series in head length, face width, bigonial diameter, face height, and face index are here repeated in a much more marked form. The bimodality, multimodality or skew distribution extends to nearly every character. In the Marquesan series stature, span, minimum frontal diameter, nasal width, ear width, cephalic, facial and nasal indices show a bimodal tendency in both sexes. The other characters are bimodal in one sex and irregular, or multimodal in the other. Only one or two characters are unimodal and regular normal curves. This feature of the series is discussed on page 163.

The Marquesans are tall, with long, wide head, a high, wide face, and a high, wide nose. All of the dimensions of the head and body are large, indicating their massive size. They are on the verge of brachycephaly. But one cannot be sure that the heads are wholly undeformed. Handy says that artificial molding of the head seems to have been universally practiced in the following way: mothers would run the hand up and back across the infant's head, pressing down with the palm and in with the fingers in a way that would tend to make the forehead more sloping, the frontal region narrower, and the back of the head somewhat elevated

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or peaked. There is no evidence of any other kind of wrapping or deformation. The effects of this treatment of infants are very evident in the photographs, particularly in the foreheads of elderly men. The practice is identical with that in Hawaii. It is difficult to say just how much it would affect the cephalic index if at all. Handy also states that the nose was flattened during infancy.

TABLE II.—SERIATION OF ANTHROPOMETRIC CHARACTERS IN ABSOLUTE NUMBERS

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1. STATURE			2. SHOULDER HEIGHT			3. ARM LENGTH			4. ARM REACH		
Centimeters	Male	Female	Centimeters	Male	Female	Centimeters	Male	Female	Centimeters	Male	Female
145	—	0	115	—	0	55	—	—	145	—	—
6	—	0	16	—	0	6	—	—	6	—	—
7	—	1	17	—	0	7	—	—	7	—	—
8	—	0	18	—	0	8	—	—	8	—	—
9	—	0	19	—	1	9	—	—	9	—	1
150	—	1	120	—	0	60	—	0	150	—	3
1	—	1	1	—	1	1	—	0	1	—	1
2	—	2	2	—	0	2	—	0	2	—	1
3	—	0	3	—	0	3	—	1	3	—	1
4	—	2	4	—	0	4	—	0	4	—	0
155	—	2	125	—	1	65	—	2	135	—	1
6	—	6	6	—	1	6	—	0	6	—	0
7	—	5	7	—	1	7	—	2	7	—	6
8	—	5	8	—	3	8	—	2	8	—	3
9	—	4	9	—	6	9	—	6	9	—	8
160	0	9	130	0	7	70	0	6	160	0	6
1	2	5	1	0	5	1	0	6	1	0	6
2	3	2	2	1	3	2	1	3	2	0	1
3	5	4	3	0	5	3	3	8	3	2	4
4	3	4	4	2	6	4	3	2	4	0	2
165	2	6	135	1	7	75	3	6	165	1	6
6	6	6	6	5	1	6	3	6	6	1	2
7	5	2	7	6	4	7	6	1	7	5	2
8	4	1	8	4	8	8	8	1	8	2	4
9	7	3	9	10	2	9	12	1	9	2	0
170	5	1	140	6	4	80	5	2	170	4	5
1	3	0	1	9	1	1	5	1	1	3	1
2	6	0	2	10	2	2	6	0	2	3	0
3	5	0	3	5	1	3	2	1	3	5	2
4	6	1	4	4	0	4	4	—	4	3	1
175	4	—	145	0	1	85	1	—	173	6	0
6	4	—	6	2	0	6	1	—	6	3	0
7	1	—	7	2	0	7	2	—	7	3	0
8	5	—	8	3	0	8	0	—	8	2	0
9	1	—	9	1	0	9	0	—	9	3	0
180	1	—	150	2	—	90	0	—	180	2	0
1	0	—	1	2	—	1	0	—	1	7	1
2	0	—	2	0	—	2	1	—	2	4	2
3	0	—	3	1	—	3	0	—	3	3	0
4	1	—	4	0	—	4	1	—	4	4	0
Total	79	73	155	1	—	Total	67	57	185	5	—
			6	1	—				6	1	—
			7	0	—				7	0	—
			8	0	—				8	1	—
			9	0	—				9	0	—
			Total	78	71				190	0	—
									1	1	—
									2	0	—
									3	1	—
									4	0	—
									195	0	—
									6	0	—
									7	1	—
									Total	78	70

5. SITTING HEIGHT			6. HEAD LENGTH			7. HEAD WIDTH			8. MINIMUM FRONTAL		
Centimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female
75	0	1	170	—	2	135	—	0	85	—	—
6	1	0	1	—	1	6	—	0	6	—	—
7	0	1	2	—	2	7	—	0	7	—	—
8	0	1	3	—	0	8	—	0	8	—	—
9	0	3	4	—	3	9	—	1	9	—	—
80	0	3	175	—	2	140	0	1	90	0	0
1	5	6	6	—	2	1	0	0	1	0	1
2	1	3	7	—	4	2	0	0	2	0	1
3	2	7	8	2	2	3	3	0	3	2	2
4	4	9	9	0	1	4	2	3	4	1	0
85	6	3	180	1	7	145	2	3	95	1	7
6	11	13	1	1	3	6	1	6	6	1	3
7	7	7	2	3	5	7	2	6	7	1	1
8	8	5	3	1	7	8	5	5	8	7	3
9	10	5	4	0	0	9	4	5	9	5	2
90	6	1	185	2	6	150	3	11	100	11	3
1	6	1	6	3	6	1	3	6	1	3	5
2	5	1	7	3	4	2	8	7	2	6	7
3	1	0	8	9	3	3	12	9	3	8	5
4	2	0	9	3	2	4	7	2	4	6	3
95	2	—	190	7	4	155	10	2	105	8	4
6	0	—	1	1	1	6	6	2	6	4	2
7	1	—	2	3	2	7	2	3	7	2	0
8	0	—	3	5	0	8	3	0	8	3	0
9	0	—	4	3	1	9	2	1	9	1	0
Total	78	70	195	6	2	160	4	1	110	4	2
			6	2	1	1	0	0	11	1	0
			7	5	0	2	2	0	12	4	1
			8	3	0	3	0	0	13	2	2
			9	2	0	4	1	0	14	1	1
			200	6	0	165	2	—	115	0	0
			1	3	0	6	0	—	16	0	0
			2	2	0	7	0	—	17	0	0
			3	3	0	8	0	—	18	1	0
			4	1	0	9	0	—	19	0	0
			205	1	0	Total	84	74	120	—	0
			6	0	0				1	—	1
			7	2	0				2	—	0
			8	0	1				3	—	0
			9	0	0				4	—	2
			210	1	—				125	—	1
			Total	84	74				Total	84	74

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9. FACE WIDTH			10. BIGONIAL			11. FACE HEIGHT			12. NOSE HEIGHT		
Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female
125	—	0	90	0	1	90	—	0	35	—	0
6	—	0	1	0	1	1	—	0	6	—	0
7	—	2	2	0	2	2	—	1	7	—	0
8	—	1	3	0	2	3	—	0	8	—	0
9	—	4	4	1	1	4	—	0	9	—	1
130	1	7	95	1	1	95	—	0	40	0	0
1	0	0	6	0	1	6	—	0	1	0	4
2	0	5	7	0	1	7	—	0	2	1	3
3	2	7	8	1	2	8	—	0	3	0	4
4	0	6	9	0	3	9	—	0	4	0	4
135	2	4	100	2	7	100	0	0	45	1	2
6	0	8	1	0	2	1	0	2	6	1	7
7	6	6	2	3	6	2	0	0	7	3	3
8	3	8	3	2	10	3	1	2	8	4	7
9	2	2	4	1	1	4	0	3	9	6	2
140	11	3	105	5	7	105	0	3	50	7	9
1	3	3	6	4	4	6	0	1	1	9	9
2	5	4	7	5	3	7	0	2	2	7	5
3	8	1	8	6	3	8	0	1	3	6	7
4	5	2	9	1	1	9	0	1	4	8	2
145	9	0	110	13	3	110	4	6	55	8	1
6	7	0	11	4	1	11	2	1	6	2	1
7	7	0	12	6	2	12	0	3	7	9	1
8	3	0	13	4	2	13	0	1	8	6	1
9	3	1	14	6	1	14	2	6	9	2	1
150	3	—	115	6	1	115	1	2	60	1	—
1	0	—	16	2	—	16	1	9	1	2	—
2	1	—	17	2	—	17	3	8	2	1	—
3	1	—	18	1	—	18	4	5	3	0	—
4	0	—	19	1	—	19	1	0	4	0	—
155	1	—	120	0	—	120	6	1	Total	84	74
6	0	—	1	1	—	1	3	4			
7	1	—	2	0	—	2	4	2			
8	0	—	3	0	—	3	4	3			
9	0	—	4	0	—	4	5	2			
Total	84	74	Total	78	69	125	2	2			
						6	6	0			
						7	5	1			
						8	1	0			
						9	5	1			
						130	4	0			
						1	5	0			
						2	2	0			
						3	3	1			
						4	2	0			
						135	2	0			
						6	0	0			
						7	0	—			
						8	1	—			
						9	1	—			
						140	1	—			
						Total	81	74			

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13. NOSE WIDTH			14. EAR HEIGHT			15. EAR WIDTH			16. RELATIVE SHOULDER HEIGHT		
Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Index	Male	Female
30	—	0	50	—	0	20	0	0	75	0	0
1	—	0	1	—	0	1	0	0	6	0	0
2	—	1	2	—	0	2	0	1	7	0	0
3	—	0	3	—	0	3	1	1	8	1	0
4	—	0	4	—	2	4	0	0	9	0	1
35	0	1	55	0	2	25	0	0	80	4	4
6	0	3	6	0	1	6	2	4	1	4	6
7	0	1	7	0	2	7	0	5	2	18	14
8	3	12	8	1	4	8	2	1	3	18	19
9	4	7	9	1	2	9	2	6	4	21	17
40	6	17	60	4	8	30	5	12	85	9	4
1	12	6	1	2	12	1	16	11	6	1	6
2	8	15	2	3	4	2	12	5	7	0	0
3	16	2	3	6	5	3	20	11	8	1	0
4	7	2	4	7	5	4	7	7	9	0	0
45	9	4	65	9	2	35	5	4	90	0	—
6	7	2	6	9	3	6	0	3	1	1	—
7	5	0	7	6	6	7	7	1	Total	78	71
8	4	0	8	10	3	8	1	1			
9	2	0	9	6	6	9	2	1			
50	—	1	70	4	1	40	1	—			
1	—	0	1	4	3	1	0	—			
2	—	0	2	2	1	2	0	—			
3	—	0	3	2	0	3	1	—			
4	—	0	4	2	1	4	0	—			
Total	83	74	75	1	—	Total	84	74			
			6	1	—						
			7	1	—						
			8	1	—						
			9	1	—						
			80	1	—						
			Total	84	73						

17. RELATIVE SITTING HEIGHT			18. RELATIVE ARM LENGTH			19. RELATIVE ARM REACH			20. CEPHALIC INDEX		
Index	Male	Female	Index	Male	Female	Index	Male	Female	Index	Male	Female
35	0	—	35	—	0	90	0	0	70	0	0
6	0	—	6	—	0	1	0	0	1	0	0
7	0	—	7	—	0	2	0	0	2	2	0
8	0	—	8	—	1	3	0	1	3	2	0
9	1	—	9	—	0	4	1	0	4	4	1
40	0	—	40	0	0	95	0	1	75	1	2
1	0	—	1	0	0	6	1	2	6	9	1
2	0	—	2	2	3	7	0	1	7	9	5
3	0	—	3	1	4	8	0	9	8	10	3
4	1	—	4	3	11	9	1	14	9	4	6
45	0	0	45	8	14	100	5	6	80	10	8
6	1	0	6	14	13	1	6	10	1	11	10
7	0	1	7	19	4	2	12	9	2	10	7
8	4	0	8	11	6	3	11	5	3	1	6
9	5	3	9	6	1	4	8	5	4	4	8
50	8	5	50	0	—	105	13	1	85	1	2
1	14	11	1	1	—	6	7	2	6	4	7
2	27	17	2	0	—	7	7	2	7	1	5
3	12	10	3	0	—	8	3	2	8	1	3
4	4	11	4	0	—	9	0	—	9	—	—
55	1	8	55	2	—	110	2	—	90	—	0
6	1	2	6	—	—	11	0	—	1	—	1
7	—	0	7	—	—	12	0	—	2	—	0
8	—	2	8	—	—	13	0	—	3	—	0
9	—	0	9	—	—	14	1	—	4	—	0
Total	79	70	Total	67	57	Total	78	70	Total	84	74

21. FRONTO-PARIETAL			22. CEPHALO-FACIAL			23. ZYGOMATICO-FRONTAL			24. ZYGOMATICO-MANDIBULAR		
Index	Male	Female	Index	Male	Female	Index	Male	Female	Index	Male	Female
55	0	—	80	—	—	60	0	—	65	0	1
6	0	—	1	—	—	1	1	—	6	0	0
7	0	—	2	—	—	2	1	—	7	0	0
8	1	—	3	—	—	3	0	—	8	3	1
9	0	—	4	1	3	4	0	—	9	0	2
60	1	1	85	0	4	65	1	0	70	3	1
1	1	1	6	0	3	6	2	1	1	3	0
2	1	3	7	2	2	7	4	1	2	2	4
3	4	4	8	2	9	8	7	1	3	4	3
4	10	1	9	3	7	9	4	0	4	5	5
65	12	8	90	7	10	70	6	3	75	3	13
6	7	10	1	3	9	1	13	8	6	19	14
7	8	14	2	8	11	2	11	6	7	8	5
8	10	10	3	13	5	3	12	8	8	10	6
9	7	7	4	13	3	4	6	10	9	6	5
70	8	1	95	14	5	75	1	9	80	7	6
1	3	4	6	5	2	6	6	5	1	2	1
2	4	0	7	7	1	7	2	7	2	1	1
3	1	1	8	3	0	8	1	2	3	3	2
4	2	1	9	0	0	9	3	1	4	0	0
75	0	1	100	1	—	80	0	1	85	2	—
6	2	0	1	0	—	1	0	2	6	0	—
7	1	1	2	2	—	2	0	1	7	0	—
6	0	1	3	0	—	3	2	1	8	1	—
9	1	2	4	0	—	4	0	1	9	1	—
80	—	2	Total	84	74	85	0	1	Total	83	70
1	—	1				6	0	0			
2	—	0				7	0	2			
3	—	0				8	0	1			
4	—	0				9	0	1			
Total	84	74				90	0	0			
						1	1	0			
						2	0	0			
						3	0	0			
						4	0	0			
						Total	84	74			

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25. FACIAL INDEX

Index	Male	Female
65	—	0
6	—	0
7	—	0
8	—	0
9	—	1
70	0	0
1	0	0
2	1	0
3	0	0
4	1	0
75	2	2
6	1	1
7	0	3
8	3	3
9	2	4
80	2	3
1	4	5
2	1	7
3	1	5
4	4	1
85	6	4
6	2	3
7	6	6
8	2	10
9	9	0
90	5	2
1	5	2
2	7	5
3	2	2
4	4	2
95	1	0
6	3	0
7	1	0
8	0	2
9	0	0
Total	77	73

26. NASAL INDEX

Index	Male	Female
60	0	1
1	0	0
2	0	0
3	1	0
4	0	0
65	0	0
6	1	1
7	0	0
8	1	0
9	0	1
70	0	1
1	1	3
2	2	0
3	1	0
4	4	4
75	3	2
6	5	4
7	4	3
8	9	5
9	5	4
80	3	4
1	4	2
2	4	1
3	4	2
4	3	1
85	3	2
6	5	5
7	2	2
8	6	4
9	2	1
90	1	3
1	0	3
2	0	0
3	0	3
4	2	2
95	0	3
6	3	1
7	0	0
8	2	3
9	0	0
100	1	1
1	0	0
2	0	1
3	0	0
4	0	0
105	0	0
6	0	0
7	1	0
8	0	1
Total	83	74

27. EAR INDEX

Index	Male	Female
35	0	—
6	0	—
7	0	—
8	1	1
9	0	1
40	4	0
1	1	0
2	4	3
3	1	7
4	2	0
45	4	4
6	8	4
7	5	2
8	11	11
9	8	2
50	6	3
1	5	5
2	7	7
3	4	5
4	2	7
55	4	1
6	1	4
7	3	4
8	1	2
9	1	0
60	0	—
1	0	—
2	0	—
3	0	—
4	1	—
Total	84	73

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TABLE III.—SUMMARY OF ANTHROPOMETRIC CHARACTERS OF MARQUESANS

CHARACTER	MALE 79 persons				FEMALE 73 persons			
	Average	S. D.	V	E[a]	Average	S. D.	V	E
141 1. Stature	170.3	5.12	3.00	.58	160.7	5.11	3.20	.60
2. Shoulder height	141.6	4.83	3.40	.55	133.7	4.97	3.70	.59
3. Arm length	79.6	4.12	5.17	.50	72.5	4.05	5.50	.54
4. Arm reach	176.7	7.05	4.00	.80	162.6	7.04	4.32	.84
5. Sitting height	87.4	4.54	5.20	.51	84.5	3.41	4.00	.41
6. Head length	193.2	7.00	3.60	.76	183.2	6.77	3.70	.79
7. Head width	153.2	4.87	3.20	.53	150.1	3.98	2.70	.46
8. Minimum frontal	103.2	5.19	5.00	.57	102.1	7.10	7.00	.82
9. Face width	143.2	4.88	3.40	.53	135.5	4.50	3.30	.52
10. Bigonial	109.5	5.23	4.80	.59	103.0	5.67	5.50	.68
11. Face height	124.1	7.30	5.80	.80	114.5	7.28	6.40	.85
12. Nose height	53.1	3.97	7.50	.43	48.6	4.40	9.00	.51
13. Nose width	43.2	2.70	6.20	.30	40.4	2.80	6.90	.33
14. Ear height	67.1	4.53	6.80	.49	62.7	5.99	9.60	.70
15. Ear width	32.7	3.05	9.30	.33	31.2	3.22	10.30	.37
16. Relative shoulder height	83.2	1.78	2.10	.20	83.0	1.58	1.90	.19
17. Relative sitting height	51.2	2.33	4.60	.26	52.6	2.03	3.90	.24
18. Relative arm length	46.8	2.17	4.63	.26	45.1	1.88	4.20	.25
19. Relative arm reach	103.8	3.00	2.90	.34	100.8	2.90	2.90	.35
20. Cephalic index	79.4	3.52	4.40	.38	82.0	3.66	4.50	.42
21. Fronto-parietal index	67.4	3.75	5.60	.41	68.0	4.50	6.60	.52
22. Cephalo-facial index	93.5	3.13	3.30	.34	90.3	3.08	3.40	.36
23. Zygomatico-frontal index	72.0	4.37	6.06	.48	75.2	5.06	6.70	.59
24. Zygomatico-mandibular index	76.8	4.02	5.20	.44	75.9	3.32	4.40	.40
25. Facial index	87.0	6.17	7.10	.70	84.7	5.69	6.70	.67
26. Nasal index	81.9	7.75	9.50	.85	83.6	9.17	10.90	1.07
27. Ear index	48.9	4.82	9.90	.52	49.6	4.83	9.70	.56

[a] In this table E = probable error of the average. S. D. = standard deviation, and V = coefficient of variation in percentage.

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TABLE IV.—SUMMARY OF THE ATTRIBUTE CHARACTERS OF THE MARQUESANS

CHARACTER	MALE		FEMALE	
Hair form:	Number	Per cent	Number	Per cent
Straight	25	30.5	19	25.7
Low waves	26	31.7	26	35.1
Deep waves	5	6.1	9	12.2
Curly	22	6.8	14	18.9
Frizzly	4	4.9	5	6.8
Woolly	0	.0	1	1.3
Totals	82	—	74	—
Hair color:	Number	Per cent	Number	Per cent
Black*	70	87.5	53	84.2
Dark brown	5	6.3	4	6.3
Reddish brown	3	3.8	6	9.5
Light brown	0	.0	0	.0
Blond	0	.0	0	.0
Golden	0	.0	0	.0
Red	0	.0	0	.0
Gray	2	2.4	0	.0
Totals	80		63	
Beard; upper cheek:	Number	Per cent	Number	Per cent
None	4	5.1	—	—
Scant	49	62.0	—	—
Medium	16	20.3	—	—
Heavy	10	12.6	—	—
Totals	79			
Beard; lower cheek:	Number	Per cent	Number	Per cent
None	40	49.4	—	—
Scant	24	29.6	—	—
Medium	13	16.0	—	—
Heavy	4	5.0	—	—
Totals	81			
Beard; chin:	Number	Per cent	Number	Per cent
None	4	5.1	—	—
Scant	49	62.0	—	—
Medium	16	20.5	—	—
Heavy	10	12.6	—	—
Totals	79			

* Many showed a reddish-brown tint in certain lights.

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CHARACTER	MALE		FEMALE	
X 142 Hair on chest:	Number	Per cent	Number	Per cent
None	50	65.8	—	—
Scant	16	21.0	—	—
Medium	5	6.6	—	—
Heavy	5	6.6	—	—
Totals	76			
Hair on forearm:	Number	Per cent	Number	Per cent
None	39	48.2	—	—
Scant	23	28.4	—	—
Medium	12	14.8	—	—
Heavy	7	8.6	—	—
Totals	81			
Hair on legs:	Number	Per cent	Number	Per cent
None	15	19.0	—	—
Scant	42	55.2	—	—
Medium	14	17.7	—	—
Heavy	8	10.1	—	—
Totals	79			
Eye color:	Number	Per cent	Number	Per cent
Black	2	1.2	0	.0
Dark brown	76	91.6	67	90.5
Blue	6	7.2	7	9.5
Gray	0	.0	0	.0
Blue-brown	0	.0	0	.0
Gray-brown	0	.0	0	.0
Totals	84		74	
Conjunctiva:	Number	Per cent	Number	Per cent
Clear	8	10.3	23	31.1
Not clear	70	89.7	51	68.9
Totals	78		74	
Epicanthic eye fold:	Number	Per cent	Number	Per cent
Absent	18	21.7	15	20.3
Trace	46	55.4	30	40.5
Medium	16	19.3	21	28.4
Marked	3	3.6	6	10.8
Totals	83		74	

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CHARACTER	MALE		FEMALE	
Nasal bridge:	Number	Per cent	Number	Per cent
Low	13	15.5	40	54.8
Medium	66	78.5	31	42.5
High	5	6.0	2	2.7
Totals	84		73	
Axes of nostrils:	Number	Per cent	Number	Per cent
Anterior-posterior	4	4.8	1	1.4
Oblique	42	50.6	27	37.0
Transverse	37	44.6	45	51.6
Totals	83		73	
Slope of forehead:	Number	Per cent	Number	Per cent
Vertical	8	9.6	24	32.9
Moderate	70	84.3	49	67.1
Low	5	6.1	9	.0
Totals	83		73	
Glabella:	Number	Per cent	Number	Per cent
Smooth	12	14.8	57	78.1
Medium	44	54.3	14	19.2
Prominent	25	30.9	2	2.7
Totals	81		73	
Lips:	Number	Per cent	Number	Per cent
Thin	7	8.4	8	10.8
Medium	54	65.1	48	64.9
Thick	22	26.5	18	24.3
Totals	83		74	
Prognathism:	Number	Per cent	Number	Per cent
None	79	98.8	66	90.4
Slight	0	.0	1	1.4
Medium	1	1.2	6	8.2
Marked	0	.0	0	.0
Totals	80		73	
Keilodonty:	Number	Per cent	Number	Per cent
Lateral incisor teeth:				
No rim	42	61.8	44	81.5
Trace of rim	16	23.5	6	14.8
Medium rim	10	14.7	2	3.7
Marked rim	—		—	
Totals	68		54	

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CHARACTER	MALE		FEMALE	
142 Mesial incisor teeth:	Number	Per cent	Number	Per cent
No rim	39	59.1	41	75.9
Trace of rim	16	24.2	9	16.7
Medium rim	11	16.7	4	7.4
Marked rim	—		—	
	—		—	
Totals	66		54	

Number of cusps on lower second molar: Right:	Number	Per cent	Number	Per cent
Four cusps	17	23.9	20	33.9
Five cusps	54	76.1	39	66.1
	—		—	
Totals	71		59	

Number of cusps on lower second molar: Left:	Number	Per cent	Number	Per cent
Four cusps	16	22.5	17	30.4
Five cusps	55	77.5	39	69.6
	—		—	
Totals	71		56	

Ear lobe:	Number	Per cent	Number	Per cent
None	1	1.2	0	.0
Small separate	8	9.6	5	6.8
Small attached	47	56.7	32	43.2
Large separate	9	10.8	10	13.5
Large attached	18	21.7	27	36.5
	—		—	
Totals	83		74	

Helix roll:	Number	Per cent	Number	Per cent
Flat	0	.0	0	.0
Rolled first third	20	23.8	13	17.6
Rolled first two-thirds	62	73.8	57	77.0
Rolled throughout	2	2.4	4	5.4
	—		—	
Totals	84		74	

Darwin's tubercle:	Number	Per cent	Number	Per cent
Present	3	4.8	0	.0

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In form the hair is typically not straight. It is either low waved or deeply waved (or curly according to the classification in this paper). It is black or dark brown in color. As elsewhere in Polynesia, there is a reddish tint near the end in certain lights. Only by the greatest stretch of the imagination can this be called blond. Some Marquesans have a dirty reddish or rusty brown hair that looks dry and dead. Often this reddish-brown hair appears in streaks. 142X

The beard is for the most part confined to the chin. Some of the Marquesans grow a dense moustache. Body hair is not abundant. It is better developed on the legs than on the arms or chest. There are a large number of nearly glabrous individuals. While I have expressed hairiness in terms of amount, in the light of Trotter's[8] findings it would be preferable to express it in terms of degree of development.

The eyes are dark brown in color, the conjunctiva not clear. It is dull, yellowish, or bloodshot in a large number of individuals. The eye fold is not well developed. The eye opening varies from the wide-open to the narrow obliquely placed eye-slits with a trace of a fold. The nasal bridge is of moderate elevation. Many Marquesans have nostrils transversely placed. These features have been discussed in detail and illustrated in my paper on Tonga.[9]

The glabella is well developed in the men. The lips are of average thickness or well above. The enamel rim on the upper incisor teeth is of very moderate frequency.

The significance of these various physical characters may perhaps best be shown by describing the Marquesans in terms of the Samoans and Tongans and to some extent in terms of the Maoris of New Zealand.

[8] Trotter, Mildred. A study of facial hair in the white and negro races: Washington Univ. Studies, vol. IX, Sci. Ser. No. 2, pp. 273-289, 1922.

[9] Bernice P. Bishop Mus. Mem. vol. VIII, No. 4.

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GENERAL COMPARISON OF MARQUESANS WITH SAMOANS AND TONGANS.

X 142 114 The Bayard Dominick Expedition has furnished the comparative data from Samoa and Tonga. For New Zealand a unique and important contribution to somatology is that of Te Rangi Hiroa, a Maori, who has recently begun to publish in serial form a careful and thoroughly scientific study of his race. The first number,[1] dealing with skin color, hair form and color, eye color, weight, and stature has already appeared. Judging from this there is every reason to expect that the completed work will form one of the most important contributions to somatology.

Although skin color is of great interest the observations upon this character were most unsatisfactory. All of the observers complained that Fritsch's standard was not adapted to the study of the Polynesians. From my own experience with it I can sympathize with them. Furthermore the Fritsch standard is not expressed in numbers and I gave to the standards arbitrary numbers of my own. As the Fritsch chart is little known and to give the results in terms of it would be useless, it became necessary to translate these results into the terms of von Luschan's scale. I did this as best I could, but found it necessary to use two numbers in many instances. In order that there might be no personal peculiarities in the results I later asked four of the men engaged in these studies to match Fritsch's scale with von Luschan's scale. Here again great differences of judgment were shown by observers in the field. In view of this it seems best to state the results of skin color as a mere approximation. Two numbers were most frequently used—numbers 10 and 18 for unexposed skin color. Translated into terms of von Luschan's scale 10 was variously given as 6, 11, 12, 13, 14, 15. Number 18 is much darker and approaches 17, 18, or 22, 23, 24 of von Luschan's scale. For Tonga and Samoa Gifford and McKern most often reported 10 as the skin color for men. Handy gives 10 and 18 in about equal proportions. This would indicate that the Marquesans were considerably darker than the Samoans and Tongans. For exposed skin, however, no such differences occur. The Tongans, Samoans, and Marquesans are very similar. Buck's studies on the Maoris seem to indicate that they are also somewhat darker than the Samoans and the Tongans.

X 142 144 From Table V it will be noted that the Marquesans have more wavy hair than either the Samoans or the Tongans. Some of the difference may be accounted for by differences in standards of observation. This is true particularly of the curly hair of the Marquesans. (See p. 144.) But it seems fairly

[1] Hiroa, Te Rangi (P. H. Buck), Maori somatology: Journ. Polynesian Soc., vol. xxxi, No. 2, 1922.

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certain that there is less straight hair in the Marquesans than in Samoa or Tonga. In Samoa and Tonga reddish-brown hair was reported, but its presence was somewhat discounted by the fact that a custom of bleaching by the use of lime was reported. Handy found a fairly high percentage of reddish-brown hair in the Marquesas, but no such process to account for it. On this point he says:[8]

> You will note that we have frequently marked hair color both black and reddish-brown. This indicates hair of the type that is almost universal with them, which appears to be black unless one sees it so that the light comes through it, when it is seen to have a strong auburn or reddish-brown tinge. I have never found any evidences of the custom of bleaching hair in the Marquesas neither in modern nor in ancient times. There was formerly a bleaching of the skin, but this is not practised now. I am convinced that this russet color in the hair was indigenous to the Marquesans before the coming of the early explorers.

This reddish tint of the hair has been the basis for much discussion and speculation. It has been attributed to intentional bleaching, to the natural bleaching effect of sunlight and salt water or both, to intermixture with the whites, or more often as evidence of a Nordic origin of the Polynesians as a whole. Speaking of hair color Buck[9] says:

> The general colour is black, but brown and reddish hair occur. Certain tribes have been stated to have had more than their share of red hair, and in these tribes it is said to occur in certain families. . . Although amongst the Maoris the confusion in colour caused by the Samoan and Tongan custom of limeing the hair, does not exist, yet owing to the admixture of white blood, great care has to be exercised in recording cases of red or brown hair as being full Maori. . . There was only one case in the whole series (760 men) of reddish brown hair and that was in a full Maori. Contrary to expectations, his skin color was 18 on von Luschan's scale (18 is the darker prevailing color of the Maori).

In Hawaii the reddish-brown hair under discussion is often found. I have seen in Hawaii thousands of mixed-bloods no one of whom had exactly this type of hair. I can confirm Doctor Buck's statement that it occurs in family groups. In two families studied it had persisted for three generations at least. As a rule it does not seem to be accompanied by a diminution of iris pigment or skin pigment. In only one family was it accompanied by weak eyes and in that only in the younger members of the family. It occurs in both sexes. Reddish-brown hair apparently occurs throughout Polynesia and I have seen the same type of hair in Chinese and Japanese who otherwise were typical members of their race. While the condition is interesting and important it should not be allowed to have too much influence on the imagination. I recommend Doctor Buck's paper for interesting comments on the Maori vocabulary and tradition dealing with hair color, hair form, and skin pigment.

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[8] Personal communication.
[9] Op. cit.

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TABLE V. COMPARISON OF ATTRIBUTE CHARACTERS IN SAMOANS, TONGANS, AND MARQUESANS ON A PERCENTAGE BASIS

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CHARACTER	MALE			FEMALE		
	Samoan	Tongan	Marquesan	Samoan	Tongan	Marquesan
Hair form:						
Straight	55.1	41.5	30.5	47.8	34.4	25.7
Low waves	27.5	41.5	31.7	39.1	46.9	35.1
Deep waves	10.1	14.4	6.1	8.8	12.5	12.2
Curly	5.8	2.5	26.8	0	5.2	18.9
Frizzly	1.4	0	4.9	4.3	1.0	6.8
Woolly	0	0	0	0	0	1.3
Hair color:						
Black	91.4	94.1	87.5	56.9	87.6	84.2
Dark brown	4.3	4.2	6.3	8.8	4.1	6.3
Reddish brown	4.2[a]	1.6[a]	3.8	34.7[a]	7.2[a]	9.5
			MALES ONLY			
Development of hair:	UPPER CHEEK			CHEST		
None	10.1	2.1	63.4	59.7	23.4	65.8
Scant	46.3	15.8	17.1	22.3	28.7	21.0
Medium	31.9	33.7	14.6	14.9	25.5	6.6
Heavy	11.5	48.4	4.9	3.0	22.3	6.6
	LOWER CHEEK			ARM		
None	14.5	4.2	49.4	3.0	0	48.2
Scant	43.3	37.2	29.6	19.1	10.5	28.4
Medium	23.2	18.1	16.0	35.3	43.2	14.8
Heavy	18.8	40.4	5.0	42.6	46.3	8.6
	CHIN			LEG		
None	0	0	5.1	0	0	19.0
Scant	23.2	19.4	62.0	7.2	7.3	53.2
Medium	27.5	30.6	20.3	42.0	66.7	17.7
Heavy	49.2	50.0	12.6	50.7	26.0	10.1
	MALE			FEMALE		
Nasal bridge						
Low	21.4	21.7	15.5	56.9	30.5	54.8
Medium	64.3	70.4	78.5	39.1	67.4	42.5
High	14.3	7.8	6.0	4.3	2.1	2.7
Axes of nostrils						
Antero	2.9	1.7	4.8	0	5.3	1.4
Oblique	57.3	78.3	50.6	39.1	69.5	37.0
Transverse	39.7	20.0	44.6	60.9	25.3	61.6
Keilodonty						
Lateral incisors: No rim	51.5	42.1	59.1	57.1	36.3	75.9
Lateral incisors: Trace	34.3	42.9	24.2	23.8	40.6	16.7
Lateral incisors: Marked	14.1	14.9	16.7	19.0	23.1	7.4
Mesial incisors: No rim	68.2	57.9	61.8	76.0	62.6	81.5
Mesial incisors: Trace	25.7	29.8	23.5	14.3	26.4	14.8
Mesial incisors: Marked	6.0	12.3	14.7	9.5	10.4	3.7

[a] Said to be bleached with lime.

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TABLE VI. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SAMOANS, TONGANS, AND MARQUESANS

CHARACTER	MALE			FEMALE		
	Samoan	Tongan	Marquesan	Samoan	Tongan	Marquesan
1. Stature	171.7	173.0	170.3	161.2	162.5	160.7
2. Head length	190.6	191.0	193.2	183.0	184.1	183.2
3. Head width	154.8	154.8	153.2	148.1	150.0	150.1
4. Minimum frontal	103.4	104.8	103.2	101.5	103.0	102.1
5. Face width	145.9	143.5	143.2	136.5	136.1	135.5
6. Bigonial diameter	104.6	104.8	109.5	99.0	99.2	103.0
7. Face height	131.1	128.2	124.1	121.1	124.1	114.5
8. Nose height	59.8	57.5	53.1	54.3	56.7	48.6
9. Nose width	43.8	44.4	43.2	41.2	41.9	40.4
10. Ear height	66.1	66.0	67.1	61.2	64.5	62.7
11. Ear width	35.2	34.5	32.7	33.6	33.4	31.2
12. Cephalic index	81.3	81.1	79.4	80.8	81.6	82.0
13. Fronto-parietal index	66.8	67.6	67.4	68.8	68.7	68.0
14. Cephalo-facial index	94.2	92.8	93.5	92.4	91.2	90.3
15. Zygomatico-frontal index	70.9	73.1	72.0	74.5	75.4	75.2
16. Zygomatico-mandibular	71.7	73.2	76.8	72.5	72.5	75.9
17. Facial index	89.9	89.2	87.0	89.8	90.8	84.7
18. Nasal index	73.6	77.6	81.9	76.3	74.2	83.6
19. Ear index	53.3	52.4	48.9	54.9	51.8	49.6

If the results may be taken at their face value the Marquesans are a much more glabrous people than either the Samoans or Tongans. While again allowances must be made for different observers it seems impossible that such large differences can be wholly explained in this way. Transverse nostrils are also more frequent in the Marquesas. On the other hand, the incisor rim is somewhat less frequent.

In Table VI the anthropometric averages are given. The Marquesans are considerably shorter than the Tongans and a little shorter even than the Samoans. The average of this series is less than that given by Deniker. The Marquesan head is longer and narrower than the heads of the Samoans and Tongans, the face is narrower and lower. The bigonial diameter is much greater. The nose is slightly narrower but markedly lower. Such differences result of course in a slightly lower cephalic index (in the males only), a larger zygomatico-mandibular index, a smaller facial index, and a larger nasal index. Again, it is possible to account for these differences in part by differences in technique, but there will still be a residue that must be explained in another way.

In Table II attention has been called to the great irregularity in distribution. There is not only a great range but a most irregular distribution within that range. This condition is emphasized by the standard deviations and coefficients of variation recorded in Table VII and in Table VIII. The Marquesan males have a greater standard deviation than either the Samoan or Tongan in ten of nineteen

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characters. In seven others they exceed the Samoans and in two others they exceed the Tongans. The excess in standard deviation for the females is in eleven of nineteen characters. In seven others they exceed the Samoans and in one other the Tongans. In both sexes the excess for facial index and nasal index is enormous. Practically the same excessive variability is revealed by the coefficients of variability. The Marquesan men have coefficients of variation greater than either the Samoans or Tongans in ten of nineteen characters. In five others they exceed the Samoans and in one other the Tongans. In the female series the excess of variation is even more accentuated. The Marquesan women are more variable than either the Samoans or Tongans in thirteen of nineteen characters and in five others they exceed the Samoans.

TABLE VII. COMPARISON OF THE STANDARD DEVIATIONS OF THE SAMOANS, TONGANS, AND MARQUESANS

CHARACTER	MALE			FEMALE		
	Samoan	Tongan	Marquesan	Samoan	Tongan	Marquesan
1. Stature	5.25	5.21	5.12	4.92	5.83	5.11
2. Head length	5.69	6.89	7.00	5.22	6.47	6.77
3. Head width	4.46	4.26	4.87	3.87	5.06	3.98
4. Minimum frontal	5.98	4.87	5.19	3.96	4.65	7.10
5. Face width	5.23	5.94	4.88	3.79	6.03	4.50
6. Bigonial	5.13	5.81	5.23	3.93	4.80	5.67
7. Face height	6.56	6.81	7.30	6.41	5.79	7.28
8. Nose height	3.64	3.91	3.97	4.53	3.75	4.40
9. Nose width	2.59	3.02	2.70	2.56	2.86	2.80
10. Ear height	4.23	4.57	4.53	3.33	3.97	5.99
11. Ear width	2.76	2.62	3.05	2.30	2.35	3.22
12. Cephalic index	3.53	3.14	3.52	2.98	4.09	3.66
13. Fronto-parietal index	3.30	3.51	3.75	3.12	3.22	4.50
14. Cephalo-facial index	2.84	4.68	3.13	2.63	3.23	3.08
15. Zygomatico-frontal index	3.55	4.23	4.37	3.34	3.33	5.06
16. Zygomatico-mandibular index	3.84	4.56	4.02	3.50	3.57	3.32
17. Facial index	4.87	4.43	6.17	5.03	4.72	5.69
18. Nasal index	5.86	7.58	7.75	7.99	6.15	9.17
19. Ear index	3.79	3.93	4.82	4.53	3.91	4.83

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TABLE VIII. COMPARISON OF THE COEFFICIENTS OF VARIATION OF THE SAMOANS, TONGANS, AND MARQUESANS (IN PERCENTAGE) 141 144

CHARACTER	MALE			FEMALE		
	Samoan	Tongan	Marquesan	Samoan	Tongan	Marquesan
1. Stature	3.05	3.01	3.00	3.05	3.58	3.20
2. Head length	2.98	3.60	3.60	2.85	3.51	3.70
3. Head width	2.88	2.75	3.20	2.61	3.37	2.70
4. Minimum frontal	5.78	4.64	5.00	3.90	4.51	7.00
5. Face width	3.59	4.13	3.40	2.77	4.43	3.30
6. Bigonial	4.90	5.54	4.80	3.96	4.83	5.50
7. Face height	5.00	5.31	5.80	5.30	4.66	6.40
8. Nose height	6.09	6.80	7.50	8.34	6.61	9.00
9. Nose width	5.91	6.80	6.20	6.21	6.82	6.90
10. Ear height	6.39	6.92	6.80	5.44	6.15	9.60
11. Ear width	7.84	7.59	9.30	6.84	7.03	10.30
12. Cephalic index	4.34	3.87	4.40	3.68	5.01	4.50
13. Fronto-parietal index	4.94	5.19	5.60	4.54	4.68	6.60
14. Cephalo-facial index	3.01	5.04	3.30	2.84	3.54	3.40
15. Zygomatico-frontal index	5.01	5.78	6.06	4.49	4.41	6.70
16. Zygomatico-mandibular index	5.42	6.22	5.20	4.83	4.92	4.40
17. Facial index	5.42	4.96	7.10	5.60	4.75	6.70
18. Nasal index	7.96	9.76	9.50	10.47	8.28	10.90
19. Ear index	7.11	7.50	9.90	8.25	7.58	9.70

TABLE IX. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SOUTHEASTERN ISLANDS (GROUP I) AND OF THE NORTHWESTERN ISLANDS (GROUP II)

CHARACTER	45 MALE 39		30 FEMALE 43	
	Group I	Group II	Group I	Group II
1. Stature	169.5	171.1	160.2	161.2
2. Shoulder height	142.2	141.7	134.5	133.1
3. Arm length	79.6	79.5	73.4	71.9
4. Sitting height	87.3	87.4	84.0	84.8
5. Arm reach	176.0	177.5	163.5	161.9
6. Head length	192.7	193.7	183.6	182.7
7. Head width	153.9	154.8	148.4	151.4
8. Minimum frontal	101.9	104.5	101.3	102.6
9. Face width	142.1	144.4	133.8	136.7
10. Bigonial	109.2	109.8	102.2	103.6
11. Face height	128.0	120.6	117.1	112.6
12. Nose height	53.8	52.2	50.6	47.3
13. Nose width	42.8	43.9	39.7	40.9
14. Ear height	67.1	67.0	62.9	62.5
15. Ear width	32.6	32.9	31.3	31.0
16. Relative shoulder height index	83.4	82.8	83.8	82.5
17. Relative arm length index	46.9	46.7	45.6	44.8

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TABLE IX. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SOUTHEASTERN ISLANDS (GROUP I) AND OF THE NORTHWESTERN ISLANDS (GROUP II)—CONTINUED

CHARACTER	MALE		FEMALE	
	Group I	Group II	Group I	Group II
18. Relative sitting height index	51.2	51.0	52.4	52.6
19. Relative arm reach index	103.8	103.8	101.5	100.3
20. Cephalic index	78.9	79.9	80.7	82.9
21. Fronto-parietal index	67.2	67.6	68.3	67.8
22. Cephalo-facial index	93.6	93.5	90.2	90.3
23. Zygomatico-frontal index	71.8	72.4	75.8	75.1
24. Zygomatico-mandibular index	76.9	76.6	76.4	75.6
25. Facial index	90.2	83.5	87.6	82.4
26. Nasal index	80.1	84.2	78.7	87.2
27. Ear index	48.8	49.1	51.0	49.7

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TABLE X. COMPARISON OF ATTRIBUTE CHARACTERS OF THE SOUTHEASTERN ISLANDS (GROUP I) AND THE NORTHWESTERN ISLANDS (GROUP II) (FREQUENCY IN PERCENTAGE)

CHARACTER	(44) MALE (38)		(31) FEMALE (43)	
	Group I	Group II	Group I	Group II
Hair form				
Straight	18.2	44.7	22.6	27.9
Low waves	43.2	18.5	45.2	27.9
Deep waves	9.1	2.6	9.7	13.9
Curly	29.5	23.7	16.1	23.3
Frizzly	0	10.5	6.4	4.7
Woolly	0	0	0	2.3
Axis of nostrils				
Antero-posterior	9.1	0	3.2	0
Oblique	54.5	46.2	54.9	23.8
Transverse	36.4	53.8	41.9	76.2
Keilodonty: Rim on mesial incisor				
Absent	45.0	80.8	68.2	81.3
Slight	32.5	11.5	22.7	12.5
Marked	22.5	7.7	9.1	6.2
Rim on lateral incisor				
Absent	50.0	80.8	71.5	87.9
Slight	31.0	11.5	19.0	12.1
Marked	19.0	7.7	9.5	0

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INTER-ISLAND DIFFERENCES

In the seriation tables and the tables of standard deviations and coefficients of variation (Tables II, VII and VIII) there is evidence of non-homogeneity in this series. Handy suggests from observation and a study of his records shows that there are possibly inter-island differences in physical type correlated with differences in culture. From his own observation Handy concludes that the people of the island of Ua Pou have larger and rounder heads and faces and straighter hair; while the people of Fatu Hiva and Hiva Oa have smaller, longer heads and curlier hair. In this opinion he was confirmed by a settler who had been resident in the islands for about twelve years. Since the series is so small it will be necessary to group the islands in order to get series of dependable size. On this point Handy again helps out with the statement that cultural and traditional evidence points to the possibility of two different subdivisions within the island groups. Some evidence (language for example) points to the grouping of Nuku Hiva, Ua Pou and Ua Huka in one group and Hiva Oa, Tahu Ata, and Fatu Hiva in the other. On the other hand, other evidence (traditional, other linguistic, and also archaeological) groups the western half of Nuku Hiva, Ua Pou, and the western half of Hiva Oa with Tahu Ata and Fatu Hiva for one section and eastern Nuku Hiva, Ua Huka, and eastern Hiva Oa for the second section.

As the first grouping divides the material used for study into almost equal parts, it seems best to adopt it tentatively. Before dealing with the distribution of the differences it seems wise to determine the magnitude of these differences. The southeastern islands of Fatu Hiva, Tahu Ata, and Hiva Oa will be called for convenience Group I. The northwestern islands of Ua Pou, Ua Huku, and Nuku Hiva will be called Group II.

The results of such a grouping will be found in Table IX and Table X. In Group I the average stature is less, the minimum frontal diameter is less, the face width is smaller, the bigonial diameter is less, the face and also the nose is markedly higher, the nose is narrower, the relative shoulder height is greater, the cephalic index is smaller, the facial index is larger, and the nasal index is smaller. The other differences are contradictory in the two sexes. The results for hair form are also somewhat doubtful and contradictory. In Group I the hair of the men is somewhat more wavy but for the women the reverse is true. In Group I the axes of the nostrils are more often antero-posterior and oblique; in Group II they are more often transverse. The incisor rim is likewise more frequent in Group I.

Fourteen different colors were given as approaching the skin color of the Marquesans. These colors were arranged into a series of increasing pigmentation. The lightest in color was numbered one, the darkest was given a value of fourteen.

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142 In this way it is possible to give an index of pigmentation for each island or group of islands. The smaller the number is the lighter is the skin color. The results are given in Table XI.

TABLE XI. INDEX OF RELATIVE PIGMENTATION OF THE SKIN BY ISLANDS AND GROUPS OF ISLANDS*

Island	NUMBER		MALE		FEMALE	
	Male	Female	Unexposed	Exposed	Unexposed	Exposed
Fatu Hiva	12	1	7.1	9.0	7.5	4.5
Hiva Oa	33	29	6.2	6.1	5.2	6.3
Group I	45	31	6.9	6.9	5.3	6.2
Ua Pou	23	26	9.2	9.0	6.7	8.1
Ua Huku	7	10	10.9	9.4	9.0	8.7
Nuku Hiva	11	7	9.0	9.6	6.0	7.5
Group II	41	43	9.4	9.2	7.1	8.1
Total Group	86	74	7.8	8.0	6.4	7.3

The differences in pigmentation are very marked. The natives of Hiva Oa are the lightest while those of Ua Huku are darkest. All of the islands of Group I have a lower index of relative pigmentation than do the islands of Group II.

141 142 The inter-island differences, in addition to the other signs of variability, are indicative of a non-homogeneous group. The variability is too great and the inter-island differences too far reaching to be accounted for by mere local peculiarities. There is every indication that more than one physical type is under consideration. Since it is unlikely that the two types are isolated in the islands selected as a basis of subdivision and that the averages given represent not the mean of two pure physical types, but the mean of two or more physical types mixed in different proportions in the two groups of islands, it is probable that if the two types can be more specifically isolated the differences between them will be increased.

* The smaller the number, the lighter is the skin color.

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RECONSTRUCTION OF THE DIFFERENT PHYSICAL TYPES IN THE MARQUESAS

On first impression it might seem that the inter-island differences could be accepted as indicative of the characters of the two or more types in the islands. But when it is recalled that it is unlikely that these types exist in any great degree of purity, it will be seen that the differences cannot be taken literally. They are, however, useful in indicating the promising mode of attack in reconstructing the two types. The most marked differences are in the facial and nasal indices with less marked differences in stature, minimum frontal, face width, face height, bigonial diameter, nasal height and nasal width, hair form, axes of nostrils, and the incisor rim. In order to reconstruct the different physical types in the islands it becomes necessary to know how these differences are correlated in the individual. In what manner does a tall individual differ from a short individual? What other characters are associated with a long head, a broad nose, or a particular type of hair form?

Characters Associated With Hair Form

Hair form is one of the most used criteria of race. If there is more than one type in the Marquesas it is important to know the characteristic hair forms of the different types. In order to determine what characters are associated with the different types of hair the material was subdivided into three groups. In Group I, have been placed all individuals with straight hair, in Group II all individuals with low waved hair, and in Group III all individuals with deeply waved, curly, or frizzly hair. If these types of hair form are merely normal variants around a median normal type and this group is a homogeneous racial group, selection on the basis of hair form should not affect the other characters. The averages of the characteristics of the straight-haired group should be the same or similar to those of the wavy-haired groups. If, on the other hand, the group is non-homogeneous and the different types of hair are indicative of different physical types, it is to be expected that the associated characteristics would be revealed in the averages. While hair form is specifically considered here, the same general principle with some slight modifications for correlated characters holds true for selection for other characters. (See p. 174.)

In Table XII and Table XIII the results of such hair form subdivision are given. On the whole the results are not very satisfactory. In some respects the results for the two sexes are so contradictory that it is impossible to know which series tells the truth. The only consistent differences that appear are as follows: in the straight-haired group the individuals are slightly shorter, their heads are larger, their bigonial diameters are less and their zygomatico-mandibular indices

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are less; in the low-waved group the noses are higher and narrower and the nasal indices smaller and the incisor rim has a lower frequency; in the deeply waved group the bigonial diameters are larger, the face heights are smaller, the noses are lower and wider, the zygomatico-mandibular indices are higher, and there are fewer antero-posteriorly placed nostrils. The most far-reaching differences seem to be associated with the deeply-waved and curly hair. But the results are still indefinite on many important characters. It is clear that further subdivision will be necessary.

TABLE XII. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE THREE HAIR-FORM GROUPS

CHARACTER	MALE			FEMALE		
	Straight	Low Waved	Deep Waved	Straight	Low Waved	Deep Waved
1. Stature	169.6	170.6	170.2	160.3	161.2	160.6
2. Shoulder height	140.9	142.4	141.2	132.4	134.4	133.8
3. Arm length	79.8	79.5	79.3	71.0	72.6	73.4
4. Sitting height	85.9	88.1	88.2	85.3	84.0	84.4
5. Arm reach	177.3	176.8	175.8	161.7	163.6	162.3
6. Head length	194.4	193.4	192.0	184.5	183.8	181.7
7. Head width	154.2	152.7	153.2	150.9	150.5	148.9
8. Minimum frontal	103.4	102.0	104.0	101.8	102.8	101.6
9. Face width	144.4	142.9	142.5	133.7	137.0	135.3
10. Bigonial	108.7	109.3	110.4	100.7	103.3	103.9
11. Face height	122.2	127.8	124.1	115.4	115.3	113.1
12. Nose height	52.9	53.8	52.4	48.2	49.7	47.9
13. Nose width	43.4	42.9	43.3	40.7	40.6	41.3
14. Ear height	68.0	67.4	65.6	63.6	61.6	63.0
15. Ear width	32.5	32.9	32.7	31.0	31.2	31.1
16. Relative shoulder height index	83.0	83.5	82.9	82.3	83.3	83.2
17. Relative arm length	47.3	46.7	46.6	44.4	45.2	45.5
18. Relative sitting height	50.4	51.6	51.7	53.2	52.2	52.7
19. Relative arm reach	104.6	103.6	103.3	100.7	100.9	100.7
20. Cephalic index	79.2	79.0	80.0	81.9	82.2	81.9
21. Fronto-parietal index	67.2	67.1	67.9	67.6	68.2	68.2
22. Cephalo-facial index	93.7	93.6	93.1	88.7	90.8	90.9
23. Zygomatic-frontal index	71.6	71.5	73.1	76.4	75.1	75.1
24. Zygomatico-mandibular index	75.9	76.5	77.5	75.0	75.5	76.8
25. Facial index	84.8	89.9	86.9	85.9	84.6	83.8
26. Nasal index	82.4	80.4	83.2	84.8	81.8	84.5
27. Ear index	48.0	48.9	49.5	48.7	50.3	49.6

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TABLE XIII. COMPARISON OF THE ATTRIBUTE CHARACTERS OF THE THREE HAIR FORM GROUPS (DISTRIBUTION IN PERCENTAGE) 142X

	MALE			FEMALE		
	Straight	Low Waved	Deep Waved	Straight	Low Waved	Deep Waved
Direction of nostrils						
Antero-posterior	4.0	11.5	0	0	0	0
Oblique	40.0	61.5	50.0	36.8	60.0	20.7
Transverse	56.0	27.0	50.0	63.2	40.0	79.3
Keilodonty; enamel rim on lateral incisor						
Absent	55.6	74.0	53.8	81.3	86.6	78.3
Slight	33.3	13.0	26.9	12.5	6.7	21.7
Marked	11.1	13.0	19.3	6.2	6.7	0
Mesial incisor						
Absent	55.6	71.5	50.0	75.0	80.0	69.6
Slight	33.3	9.5	30.8	12.5	6.7	26.1
Marked	11.1	19.0	19.2	12.5	13.3	4.3

TABLE XIV. CHARACTERISTICS OF THE 23 TALLEST MEN 141 142X

Catalog number	Stature	Minimum frontal	Face width	Bigonial	Face height	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek [a]
156	174	98	143	110	122	78.4	96.0	84.1	80.7	7	10
98	174	105	145	110	130	80.2	91.8	89.7	84.9	11	11
85	174	112	147	105	115	80.2	93.0	78.2	88.7	12	10
46	174	105	148	106	129	83.0	98.0	87.2	88.2	10	12
174	174	106	144	114	126	79.3	94.1	87.5	74.5	5	5
110	174	93	150	114	118	85.5	84.3	78.7	74.6	13	10
11	175	100	143	110	127	79.5	92.3	88.8	83.0	11	11
45	175	106	149	105	126	82.5	93.1	84.6	87.8	10	12
122	175	107	140	95	132	76.1	91.5	94.3	95.7	10	10
94	175	104	146	115	129	76.5	95.4	88.4	77.2	4	6
40	176	100	146	111	----	75.9	94.8	----	77.6	10	9
195	176	99	145	110	126	77.6	95.4	86.9	82.7	9	6
78	176	102	140	108	133	80.7	88.0	95.0	----	10	10
36	176	99	140	----	124	81.0	91.5	88.6	78.2	7	11
132	177	102	147	117	127	83.9	94.2	86.4	70.9	3	5
200	178	95	147	110	131	78.0	94.2	89.1	80.7	6	4
77	178	104	133	108	----	81.0	----	----	78.4	12	6
9	178	105	146	113	110	82.2	90.1	75.3	88.5	11	11
68	178	111	146	111	118	79.0	94.8	80.8	93.9	10	6
17	178	100	148	114	132	77.5	95.5	89.2	75.9	12	11
201	179	105	145	115	133	76.5	94.8	91.7	69.9	8	7
166	180	103	143	110	131	80.8	94.1	91.6	77.4	10	11
27	184	113	152	115	120	86.3	92.7	79.0	86.0	12	10
Averages		103.2	144.9	110.3	125.7	80.1	93.6	86.4	81.3	9.2	8.8
Average of total series		103.2	143.2	109.5	124.1	79.4	93.5	87.0	81.9	7.8	8.0

[a] The pigment number given in this and the following column is the relative pigment of the total series. The number ranges from 1 to 14. Number 1 is the lightest and number 14 is the darkest.

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TABLE XV. CHARACTERISTICS OF THE 20 TALLEST WOMEN

Catalog number	Stature	Minimum frontal	Face width	Bigonial	Face height	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
61	164	102	141	107	116	83.1	92.8	82.3	93.5	7	10
64	165	103	138	100	121	82.5	88.5	87.7	78.4	5	5
67	165	105	137	103	123	83.1	90.1	89.8	71.2	7	6
102	165	100	138	104	112	73.8	95.8	81.2	90.2	6	6
51	165	91	138	101	110	81.3	93.2	79.7	88.4	6	10
181	165	95	135	103	104	86.0	91.8	77.0	89.1	4	6
117	166	102	142	114	123	80.2	97.3	87.2	88.0	9	10
87	166	124	149	110	124	83.5	94.9	83.2	77.4	4	7
33	166	103	134	101	117	83.9	88.7	87.3	93.8	11	10
38	166	101	142	106	110	81.2	91.0	77.5	93.3	6	9
161	166	103	138	105	121	83.5	87.9	87.7	70.4	5	4
145	166	102	136	100	125	79.1	91.9	91.9	70.6	5	5
59	167	105	141	92	133	81.0	81.6	94.3	90.9	4	10
48	167	100	134	102	117	81.4	89.9	87.3	80.0	10	11
160	168	113	138	110	117	77.0	93.9	84.8	78.4	4	10
91	169	113	135	105	113	81.8	88.2	83.7	88.2	4	6
63	169	101	139	108	122	80.5	93.3	87.8	97.6	5	10
171	169	100	135	93	111	78.5	92.5	82.2	69.2	4	6
49	170	105	134	100	117	75.0	91.2	87.3	95.4	10	7
151	174	104	137	106	117	79.2	90.1	85.4	78.4	4	5
Average		103.6	138.0	103.5	117.6	80.8	91.7	85.3	84.1	6.0	7.6
Average of total series		102.1	135.5	103.0	114.5	82.0	90.3	84.7	83.6	6.4	7.3

TABLE XVI. CHARACTERISTICS OF THE 21 SHORTEST MEN

Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
111	161	79.6	98.1	76.5	87.5	5	10
119	161	77.0	95.8	87.0	87.5	12	12
129	162	77.3	94.4	89.6	75.9	4	6
62	162	86.1	93.6	80.7	94.0	7	12
146	162	74.1	93.0	93.2	75.9	6	6
14	163	82.4	95.3	83.9	72.7	10	9
120	163	76.6	97.4	80.0	75.9	12	12
173	163	87.8	86.7	86.0	77.4	10	6
116	163	84.5	91.5	85.0	89.6	6	4
41	163	78.4	95.3	77.5	78.8	10	10

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TABLE XVI. CHARACTERISTICS OF THE 21 SHORTEST MEN—CONTINUED

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Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
193	164	85.4	90.1	92.0	87.8	6	6
125	164	81.9	89.0	----	84.0	7	10
66	164	76.7	92.3	82.5	85.4	12	10
183	165	80.1	94.6	90.1	96.1	4	5
199	165	77.4	97.4	79.6	86.0	4	7
169	166	84.3	90.4	92.2	75.5	4	5
158	166	82.0	91.3	95.6	72.1	4	6
123	166	77.3	92.8	87.3	100.0	10	10
86	166	77.5	83.9	89.2	86.0	4	4
57	166	81.6	96.8	74.0	80.8	10	9
177	166	76.3	92.0	89.0	81.1	10	6
Average		80.2	92.9	85.5	83.3	7.5	7.9
Average total series		79.4	93.5	87.0	81.9	7.8	8.0

TABLE XVII. CHARACTERISTICS OF THE 20 SHORTEST WOMEN

Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
92	147	87.9	86.9	88.0	91.3	11	11
182	150	75.3	90.7	92.9	81.2	4	5
108	151	84.2	91.3	76.5	79.2	4	6
185	152	82.0	93.3	82.1	93.0	4	6
138	152	83.6	89.9	92.5	73.7	5	5
99	154	80.6	88.0	78.8	85.7	7	6
155	154	85.6	89.3	82.7	83.3	5	6
112	155	82.7	85.0	84.6	90.9	4	7
4	155	86.9	84.3	81.4	85.7	11	9
187	155	78.5	88.4	91.5	65.5	5	5
50	156	80.3	95.9	71.6	100.0	10	9
32	156	83.3	91.7	77.4	79.2	10	10
7	156	80.0	88.6	86.4	78.4	10	12
180	156	80.0	85.5	90.0	82.6	5	5
140	156	80.0	94.6	82.9	80.4	5	5
80	157	86.1	87.7	86.8	76.9	6	10
37	157	88.2	90.0	77.8	93.0	11	11
13	157	85.0	86.9	85.7	74.5	10	9
82	157	83.3	90.7	82.4	80.0	6	4
126	157	80.7	89.8	87.9	76.0	10	4
Average		82.7	89.4	83.9	82.5	7.1	6.8
Average total series		82.0	90.3	84.7	83.6	6.4	7.3

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TABLE XVIII. AVERAGE CHARACTERISTICS OF STATURE GROUPS

	MEN			WOMEN		
	23 Tallest	Total	21 Shortest	20 Tallest	Total	20 Shortest
Cephalic index	80.1	79.4	80.2	80.8	82.0	82.7
Cephalo-facial index	93.6	93.5	92.9	91.7	90.3	89.4
Facial index	86.4	87.0	85.5	85.3	84.7	83.9
Nasal index	81.3	81.9	83.3	84.1	83.6	82.5
Arm pigment	9.2	7.8	7.5	6.0	6.4	7.1
Cheek pigment	8.8	8.0	7.9	7.6	7.3	6.8

Characters Associated with Stature

The Polynesians are always cited as among the tallest races of man. Their physique is extolled in all books of travel and early exploration. For this reason it is of special interest to know what other characters occur in association with tall stature. Likewise it will be of interest to know what characters are associated with short stature. I have selected a sufficiently large number of the tallest and shortest individuals to give some approach to a reliable or significant average and listed their characteristics in Tables XIV, XV, XVI, XVII, and XVIII. But the averages are based upon such small numbers that the characters of the individuals must be studied as well as the averages. One or two extremes might nullify the conclusions based on averages. As is to be expected, the tall men and women have greater absolute diameters such as face width and bigonial diameter. This is a natural normal correlation in all races of man and is not in itself indicative of racial heterogeneity. There is, however, no very great correlation between stature and the indices and proportions or between stature and the attribute characters in a homogeneous race group.

The characters associated with tall stature are very variable, especially in the women. In the male series the tallest men are markedly variable, but show a somewhat greater tendency to approach one type. A large number have heads somewhat longer than the average, a high facial index, and a small nasal index and with these characters is associated a lighter skin. But in the averages the other individuals in the series hide this fact. The average shows the men to have somewhat shorter heads than the total series, but longer than those of the shortest men. The cephalo-facial index is higher, the facial index is smaller, but somewhat greater than that of the shortest men, the nasal index is smaller and the skin slightly darker. The women have longer heads, higher faces, but wider noses than the total series. On the whole there does not seem to be a very close correlation between tall stature and the other characteristics studied.

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In the series of shortest individuals the results are somewhat more clear and are in closer agreement in the two sexes. In a large number of individuals of both sexes short stature seems to be associated with short heads, smaller cephalo-facial indices, and lower faces. The nose character and pigmentation are different in the two sexes. Again, while the results indicate the non-homogeneity of the series, they do not show clearly just what in detail are the characteristics of the different types.

TABLE XIX. CHARACTERISTICS OF 18 MEN WITH THE LONGEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form [a]	Amount of hair [b]	Arm pigment	Cheek pigment
190	72.4	----	91.2	75.4	1	3	6	4
109	72.4	169	83.9	83.6	4	6	10	12
141	72.9	172	92.5	78.2	1	4	11	6
134	73.4	171	96.6	81.5	2	1	6	6
146	74.1	162	93.2	75.9	2	3	6	6
65	74.3	172	84.8	84.6	1	3	10	7
170	74.4	168	87.1	80.4	2	5	4	4
5	74.5	171	84.9	78.8	4	1	11	10
100	75.1	170	91.8	76.9	1	2	11	10
147	75.6	170	84.8	86.0	4	10	4	6
154	75.9	----	88.9	78.4	4	2	4	4
40	75.9	176	----	77.6	1	15	10	9
122	76.1	175	94.3	95.7	2	2	10	10
118	76.2	169	88.6	89.4	4	5	4	10
177	76.3	166	89.0	81.1	3	6	10	6
12	76.4	173	82.0	82.7	1	1	6	7
201	76.5	179	91.7	62.9	2	2	8	7
94	76.5	175	88.4	77.2	2	3	4	6
Average		171.1	89.0	80.3	2.3	4.1	7.5	7.2
Average total series		170.3	87.0	81.9	2.4	5.3	7.8	8.0

[a] Hair form is numbered consecutively from straight to woolly. A value of 1 is given to straight hair, 2 to low-waved hair, etc. The smaller the number, the straighter the hair or vice versa.

[b] The hair is numbered in accordance with its abundance: none = 0, slight = 1, medium = 2, abundant = 3. It was observed in six places. The number in this column is the total of the observations. It may be as high as 18 in an individual.

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TABLE XX. CHARACTERISTICS OF 17 WOMEN WITH LONGEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
102	73.8	165	81.2	90.2	4	6	6
49	75.0	170	87.3	95.4	1	10	7
182	75.3	150	92.9	81.2	3	4	5
127	76.0	159	90.8	90.2	2	4	7
172	76.8	160	94.2	77.4	2	5	5
26	76.9	163	75.4	90.0	1	10	9
160	77.0	168	84.8	78.4	4	4	10
81	77.1	163	87.7	84.0	1	4	6
75	77.3	163	80.9	97.6	2	4	5
139	78.1	—	86.6	75.0	4	6	6
171	78.5	169	82.2	69.2	2	6	6
15	79.0	160	88.3	79.6	2	4	11
145	79.1	166	91.9	70.6	1	5	5
149	79.1	164	86.4	87.0	1	6	6
178	79.2	160	93.2	75.5	3	6	6
151	79.2	174	85.4	78.4	2	4	5
110	79.4	159	84.7	76.0	4	6	6
Average		163.3	86.7	82.1	2.3	5.5	6.5
Average of total series		160.7	84.7	83.6	2.5	6.4	7.3

TABLE XXI. CHARACTERISTICS OF THE 22 MEN WITH THE SHORTEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
159	81.6	172	84.1	68.4	3	2	4	6
57	81.6	166	74.0	80.8	2	11	10	9
28	81.8	173	75.3	97.8	3	2	11	11
125	81.9	164	85.4	84.0	1	6	7	10
168	81.9	170	92.1	71.9	2	4	5	6
158	82.0	166	95.6	72.1	3	3	4	6
29	82.1	168	85.2	82.0	1	2	10	10
9	82.2	178	75.3	88.5	1	0	11	11
14	82.4	163	83.9	72.7	1	11	10	9
45	82.5	175	84.6	87.8	1	1	10	12
46	83.0	174	87.2	88.2	5	4	10	12
152	83.9	177	86.4	70.9	2	6	3	5
107	84.0	172	85.2	62.4	4	3	11	10
169	84.3	166	92.2	75.5	4	4	4	5
116	84.5	163	85.0	89.6	1	3	6	4
193	85.4	164	92.0	87.8	2	0	6	6
110	85.5	174	78.7	74.6	2	0	13	12
2	85.6	173	81.4	97.8	4	3	11	9
62	86.1	162	80.7	94.0	1	1	7	12
27	86.3	184	79.0	86.0	4	2	12	10
179	87.1	167	85.4	79.6	4	2	4	4
173	87.8	163	86.0	77.4	2	4	10	6
Average		169.7	84.3	82.2	2.4	3.4	8.1	8.4
Average of total series		170.3	87.0	81.9	2.4	5.3	7.8	8.0

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TABLE XXII. CHARACTERISTICS OF THE 19 WOMEN WITH THE SHORTEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
136	84.8	160	87.7	79.2	2	4	6
13	85.0	157	85.7	74.5	3	10	10
155	85.6	154	82.7	85.3	2	5	6
1	85.6	160	79.8	87.5	1	11	9
30	86.0	160	80.2	85.7	4	4	6
3	86.0	161	82.9	85.7	1	4	9
181	86.0	165	77.0	89.1	2	4	6
22	86.1	159	81.8	95.4	1	6	10
80	86.1	157	86.8	76.9	3	6	10
44	86.9	158	77.5	95.1	3	10	7
4	86.9	156	81.4	85.7	1	11	9
68	87.2	161	75.4	107.7	5	10	9
6	87.4	158	77.4	85.1	2	9	10
150	87.4	158	88.5	74.5	2	1	2
92	87.9	147	88.0	91.3	1	11	11
21	88.2	161	68.7	86.4	6	10	10
37	88.2	167	77.8	93.0	3	11	11
19	88.7	164	79.2	75.0	2	10	9
97	91.3	160	80.6	80.8	2	10	9
Average		158.6	81.0	85.9	2.4	7.7	7.8
Average of total series		160.7	84.7	83.6	2.5	6.4	7.3

TABLE XXIII. AVERAGE CHARACTERISTICS OF HEAD FORM GROUPS

	18 MEN			WOMEN		
	Longest heads	Total series	Shortest heads	Longest heads	Total series	Shortest heads
Stature	171.1	170.3	169.7	163.3	160.7	158.6
Facial index	89.0	87.0	84.3	86.7	84.7	81.0
Nasal index	80.3	81.9	82.2	82.1	83.6	85.9
Hair form	2.3	2.4	2.4	2.3	2.5	2.4
Amount of hair	4.1	5.3	3.4	----	----	----
Arm pigment	7.5	7.8	8.1	5.5	6.4	7.7
Cheek pigment	7.2	8.0	8.4	6.5	7.3	7.8

Characters Associated with Head Form

The cephalic index of Marquesans ranges from 72 to 91. This range of 20 points is rather high, but most of the individuals fall between 76 and 82 in the male series and between 77 and 84 in the female series. Extremely long heads and extremely short heads are of rare occurrence.

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141 In Tables XIX, XX, XXI, XXII, and XXIII the men and women with the
x 142 longest and shortest heads, respectively, are listed. This division in the main is very satisfactory. With the long heads there are associated in a very large number of individuals tall stature, high faces, narrow noses, straight hair, an abundance of beard and body hair, and a lighter skin color. This holds true for both sexes. Number 102 (Table XXVII) comes nearer to the Melanesian type, but it is the most outstanding exception to the above generalization.

In the short-headed series the results are not quite so satisfactory so far as the individuals making up the series are concerned. Many short heads are associated with short stature, low faces, broader noses, more wavy hair, less beard and body hair, and a darker skin color. There are a few exceptions to the rule that are worthy of further study. In the female series Numbers 136, 13, 80, 150, and 19, and in the male series Numbers 159, 158, 152, 169, 110, 179, 173 have very short heads but high or medium faces with very narrow noses. In many ways, with the exception of head form, they approach the characteristics of those individuals having the longest heads. They have a light skin. They are either individuals of the same type with deformed heads or represent a different type with some characteristics in common. A large proportion of these persons have hair much more wavy than the average. But in addition to these exceptional individuals we have the long list of characteristics associated with the longest and the shortest heads mentioned above. From these it is clear that the face form and nose form are the most promising remaining bases of subdivision.

Characteristics Associated with Face Form

The facial index has an enormous range of 30 points. In Tables XXIV, XXV, XXVI, XXVII, and XXVIII are listed the individuals with the highest and lowest faces respectively. The results of such subdivisions or groupings are very satisfactory. The two sex series agree in associating longer heads, narrower noses, more beard and body hair and a lighter skin color with the higher facial indices. This is true of the individuals as well as of the average. It is not quite as clear what type of stature or hair form is associated with the higher faces since the results differ in the two sexes.

The characters associated with a low face are short stature, shorter heads, wider noses, less beard and body hair and darker skin. But here again the hair form associated with a low face is not clearly distinctive. If we accept the women as a criterion wavy hair is associated with a low face, while a high face is associated with straighter hair.

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TABLE XXIV. CHARACTERISTICS OF THE 23 MEN WITH THE HIGHEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form [a]	Amount of hair [b]	Arm pigment	Cheek pigment
88	90.7	169	81.2	79.3	4	12	4	6
176	91.0	168	81.4	73.7	4	5	4	5
190	91.2	----	72.4	75.4	1	3	6	4
189	91.3	169	81.3	84.3	4	5	4	4
143	91.4	----	77.7	73.7	3	11	5	5
166	91.6	180	80.8	77.4	4	8	10	11
201	91.7	179	76.5	62.9	2	2	8	7
100	91.8	170	75.1	76.9	1	2	11	10
193	92.0	164	85.4	87.8	2	0	6	6
168	92.1	170	81.9	71.9	2	4	4	6
16	92.1	170	78.4	78.8	2	3	---	---
169	92.2	166	84.3	75.5	4	4	4	5
141	92.5	172	72.9	78.2	1	4	1	6
146	93.2	162	74.1	75.9	2	3	6	6
121	93.5	169	78.3	74.6	2	6	4	11
122	94.3	175	76.1	95.7	2	2	10	10
104	94.4	173	81.4	80.0	4	18	4	6
184	94.5	173	81.4	78.7	4	14	4	5
78	95.0	176	80.7	----	1	6	10	10
158	95.6	166	82.0	72.1	3	3	4	6
198	95.7	168	79.5	66.1	1	10	5	6
186	96.5	173	79.0	74.1	2	1	4	6
134	96.6	171	73.4	81.5	2	1	6	6
Average		170.6	78.9	77.0	2.5	5.5	5.6	6.2
Average of total series		170.3	79.4	81.9	2.4	5.3	7.8	8.0

[a] Hair form is given a numerical value. 1 = straight, 2 = low waves, 3 = deep waves, 4 = curly, 5 = frizzly, 6 = woolly. These are averaged at the bottom, the larger the number the more wavy the hair.

[b] The amount of beard and body hair is given a numerical value. 0 = absent, 1 = sparse, 2 = medium, 3 = heavy. Since it was observed on six different places a very hairy individual would have a total of 18. The values are averaged the same as the value for pigmentation. The results of this process are not satisfactory, as a few extreme individuals have a great weight in determining the average.

TABLE XXV. CHARACTERISTICS OF 25 WOMEN WITH HIGHEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Cheek pigment
161	87.7	166	83.5	70.4	2	5	4
136	87.7	160	84.8	79.2	2	4	6
81	87.7	163	77.1	84.0	1	4	6
64	87.7	165	82.5	78.4	1	5	5
63	87.8	169	80.5	97.6	4	4	10
126	87.9	157	80.7	76.0	4	10	4
92	88.0	147	87.9	91.3	1	11	11
192	88.1	164	80.2	75.5	4	5	6
15	88.3	160	79.0	79.8	2	4	11
150	88.5	158	87.4	74.5	2	1	2
67	89.8	165	83.1	71.2	1	7	6

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TABLE XXV. CHARACTERISTICS OF 25 WOMEN WITH HIGHEST FACES—CONTINUED

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Cheek pigment
180	90.0	156	80.0	82.6	1	5	5
127	90.8	159	76.0	90.2	2	4	7
95	91.3	160	81.6	84.8	1	4	9
187	91.5	155	78.5	65.5	2	5	5
196	91.7	163	81.7	71.4	3	6	4
145	91.9	166	79.1	70.6	1	5	5
148	92.3	162	83.4	60.4	5	10	6
138	92.5	152	83.6	73.7	1	5	5
182	92.9	150	75.3	81.2	3	4	5
178	93.2	160	79.2	75.5	3	6	6
172	94.2	160	76.8	77.4	2	5	5
59	94.3	167	81.0	90.9	2	4	10
188	97.7	158	81.4	79.2	5	4	4
142	97.7	158	80.0	78.0	2	4	5
Average		160.0	80.9	78.3	2.3	5.2	6.1
Average of toatl series		160.7	82.0	83.6	2.5	6.4	7.3

TABLE XXVI. CHARACTERISTICS OF THE 19 MEN WITH LOWEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
55	72.0	167	79.7	107.1	5	2	12	10
57	74.0	166	81.6	80.8	2	11	10	9
28	75.3	173	81.8	97.8	3	2	11	9
9	75.3	178	82.2	88.5	1	0	11	11
111	76.6	161	79.6	87.6	1	6	5	10
41	77.5	172	80.8	77.8	1	1	10	10
41	77.5	163	78.4	78.8	1	6	10	10
89	78.2	174	80.2	89.7	4	6	12	10
110	78.7	174	85.5	74.6	2	0	13	10
27	79.0	184	86.3	86.0	4	2	12	10
199	79.6	165	77.4	86.0	1	12	4	7
120	80.0	163	76.6	75.9	1	5	12	12
62	80.7	162	86.1	94.0	1	1	7	12
68	80.8	178	79.0	93.2	2	2	10	6
31	81.1	171	80.0	87.0	1	15	10	10
2	81.4	173	85.6	97.8	4	3	11	9
12	82.0	173	76.4	82.7	1	1	6	7
66	82.5	184	76.7	85.4	5	9	12	10
23	83.2	167	78.2	78.4	5	12	11	7
Average		169.9	80.7	86.8	2.4	5.0	9.9	9.4
Average of total series		170.3	79.4	81.9	2.4	6.3	7.8	8.0

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TABLE XXVII. CHARACTERISTICS OF THE 24 WOMEN WITH THE LOWEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Cheek pigment
50	68.7	156	80.3	100.0	4	10	9
26	71.6	163	76.9	90.0	1	10	9
68	75.4	161	87.2	107.7	5	10	9
21	75.4	161	88.2	86.4	6	10	10
108	76.5	151	84.2	79.2	2	4	6
181	77.0	165	86.0	89.1	2	4	6
39	77.2	164	83.6	102.4	3	4	10
6	77.4	158	87.4	85.1	2	9	10
32	77.4	156	83.3	79.2	4	10	10
44	77.5	158	86.9	95.1	3	10	7
38	77.5	166	81.2	93.3	2	6	9
37	77.8	157	88.2	93.0	3	11	11
92	76.8	154	80.6	85.7	5	7	6
133	78.9	161	81.1	73.6	2	5	6
71	79.1	162	82.4	96.6	3	4	4
19	79.2	164	88.7	75.0	2	10	9
51	79.7	165	81.3	88.4	2	6	10
1	79.8	160	85.6	87.5	1	11	9
30	80.2	160	86.0	85.7	4	4	6
97	80.6	160	91.3	80.8	2	10	9
75	80.9	163	77.3	97.8	2	4	5
35	81.1	161	81.2	97.7	1	6	10
102	81.2	165	73.8	90.2	4	6	6
4	81.4	156	88.9	85.7	1	11	9
Average		160.3	83.7	89.5	2.8	7.6	8.1
Average of total series		160.7	82.0	83.6	2.5	6.4	7.3

TABLE XXVIII. AVERAGE OF CHARACTERISTICS OF FACE FORM GROUPS

	23	MEN	19	25	WOMEN	24
	Highest faces	Total series	Lowest faces	Highest faces	Total series	Lowest faces
Stature	170.6	170.3	169.9	160.0	160.7	160.3
Cephalic index	78.9	79.4	80.7	80.9	82.0	83.7
Nasal index	77.0	81.9	86.8	78.3	83.6	89.3
Hair form	2.5	2.4	2.4	2.3	2.5	2.8
Hair amount	5.5	5.3	5.0	—	—	—
Arm pigment	5.6	7.8	9.9	5.2	6.4	7.6
Cheek pigment	6.2	8.0	9.4	6.1	7.3	8.1

12: Sullivan D-4 (no date) 1923 CX6 Marquesas CX6

Characters Associated with Nose Form

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X142 Nose form is the most variable of all the characters. It ranges from an index of 60 to one of 108. In other words there is here in one series the greater part of the entire range of the nasal index. An inspection of Tables XXIX, XXX, XXXI, XXXII, and XXXIII will show that the narrowest noses are associated with taller stature, slightly longer heads, higher faces, more beard and body hair and a lighter skin color.

The widest noses are associated with shorter stature, shorter heads, lower faces, less body hair, and a darker skin color. Hair form is again uncertain.

TABLE XXIX. CHARACTERISTICS OF THE 23 MEN WITH THE NARROWEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
201	62.9	179	76.5	91.7	2	2	8	7
198	66.1	168	79.5	95.7	1	10	5	6
159	68.4	172	81.6	84.1	3	2	4	6
152	70.9	177	83.9	86.4	2	6	3	5
168	71.9	170	81.9	92.1	2	4	5	6
158	72.1	166	82.0	95.6	3	3	4	6
14	72.7	163	82.4	83.9	1	11	10	9
176	73.7	168	81.4	91.0	4	5	4	5
143	73.7	—	77.7	91.4	3	11	5	5
186	74.1	173	79.0	96.5	2	1	4	6
174	74.5	174	79.3	87.5	2	4	5	5
121	74.6	169	78.3	93.5	2	6	4	11
110	74.6	174	85.5	78.7	2	0	13	10
190	75.4	—	72.4	91.2	1	3	6	4
169	75.5	166	84.3	92.2	4	4	4	5
146	75.9	162	74.1	93.2	2	3	6	6
120	75.9	163	76.6	80.0	1	5	12	12
129	75.9	162	77.3	89.6	2	15	4	6
17	75.9	178	77.5	89.2	2	2	12	11
100	76.9	170	75.1	91.8	1	2	11	10
94	77.2	175	76.5	88.4	2	3	4	6
166	77.4	180	80.8	91.6	4	8	10	11
173	77.4	163	87.8	86.0	2	4	10	6
Average		170.0	79.6	89.6	2.2	4.9	6.6	7.1
Average total series		170.3	79.4	87.0	2.4	5.3	7.8	8.0

12: Sullivan D-4 (no date) 1923 OX6 Marquesas OX6

TABLE XXX. CHARACTERISTICS OF THE 20 WOMEN WITH THE NARROWEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Arm pigment	Cheek pigment
148	60.4	162	83.4	92.3	5	10	6
187	65.5	155	78.5	91.5	2	5	5
171	69.2	169	78.5	82.2	2	6	6
161	70.4	168	83.5	87.7	2	5	4
145	70.6	166	79.1	91.9	1	5	5
67	71.2	165	83.1	89.8	1	7	6
196	71.4	163	81.7	91.7	3	6	4
133	73.6	161	81.1	78.9	2	5	6
138	73.7	152	83.6	92.5	1	5	5
150	74.5	158	87.4	88.5	2	1	2
13	74.5	157	85.0	85.7	3	10	9
19	75.0	164	88.7	79.2	2	10	4
139	75.0	.....	78.1	86.6	4	6	6
178	75.5	160	79.2	93.2	3	6	6
192	75.5	164	80.2	88.1	4	5	6
110	76.0	159	79.4	84.7	4	6	6
126	76.0	157	80.7	87.9	4	10	4
80	76.9	157	86.1	86.8	3	6	10
172	77.4	160	76.8	94.2	2	5	5
87	77.4	166	83.5	83.2	2	4	7
Average		161.1	81.9	87.8	2.6	6.1	5.6
Average total series		160.7	82.0	84.7	2.5	6.4	7.3

TABLE XXXI. CHARACTERISTICS OF THE 25 MEN WITH THE WIDEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
165	85.7	167	80.8	89.3	4	2	7	6
199	86.0	165	77.4	79.6	1	12	4	7
86	86.0	166	77.5	89.2	4	2	4	4
147	86.0	170	75.6	84.8	4	10	4	6
27	86.0	184	86.3	79.0	4	2	12	10
31	87.0	171	80.0	81.1	1	14	10	10
54	87.0	172	79.7	87.2	1	8	10	9
119	87.5	161	77.0	87.0	2	7	12	12
111	87.5	161	79.3	76.5	1	6	5	10
193	87.8	164	85.4	92.0	2	0	6	6
45	87.8	175	82.5	84.6	1	1	10	12
46	88.2	174	83.0	87.2	5	4	10	12
9	88.5	178	82.2	75.3	1	0	11	11
89	88.7	174	80.2	78.2	4	6	12	10
118	89.4	169	76.2	88.6	4	5	4	10
116	89.8	163	84.5	85.0	1	3	6	4
68	90.9	173	79.0	80.3	2	2	10	6

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TABLE XXXI. CHARACTERISTICS OF THE 25 MEN WITH THE WIDEST NOSES—CONTINUED

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
62	94.0	162	86.1	80.7	1	1	7	12
122	95.7	175	76.1	94.3	2	2	10	10
164	95.9	167	77.0	90.5	4	3	4	6
183	96.1	165	80.1	90.1	2	2	4	5
28	97.8	173	81.8	75.3	3	2	11	9
2	97.8	173	85.8	81.4	4	3	11	9
123	100.0	166	77.3	87.3	2	2	10	10
55	107.1	167	79.7	72.0	5	2	12	10
Average		169.6	80.4	83.9	2.6	4.0	8.2	8.6
Average of total series		170.3	79.4	87.0	2.4	5.3	7.8	8.0

TABLE XXXII. CHARACTERISTICS OF THE 21 WOMEN WITH THE WIDEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Arm pigment	Cheek pigment
26	90.0	163	76.9	75.4	1	10	9
127	90.2	159	76.0	90.8	2	4	7
102	90.2	165	73.8	81.2	4	6	6
59	90.9	167	81.0	94.3	2	4	10
112	90.9	155	82.7	84.6	1	4	7
92	91.3	147	87.9	88.0	1	11	11
185	93.0	152	82.0	82.1	2	4	6
37	93.0	157	88.2	77.8	3	11	11
38	93.3	166	81.2	77.5	2	6	9
61	93.5	165	83.1	82.3	2	7	10
33	93.8	166	83.9	87.3	4	11	10
49	95.4	170	75.0	87.3	1	10	7
22	95.4	159	86.1	81.8	1	6	10
44	95.1	158	86.9	77.5	3	10	7
71	95.6	162	82.4	79.1	5	4	9
63	97.6	169	80.5	87.8	4	4	10
75	97.6	163	77.3	80.9	2	4	5
35	97.7	161	81.2	81.1	1	6	10
50	100.0	156	80.3	71.6	4	10	9
39	102.4	164	83.5	77.2	3	4	10
68	107.7	161	87.2	75.4	5	10	9
Average		161.1	81.8	82.0	2.5	7.0	8.6
Average of total series		160.7	82.0	84.7	2.5	6.4	7.3

TABLE XXXIII. AVERAGE CHARACTERISTICS OF THE NOSE FORM GROUPS

	23 MEN		25	WOMEN		
	Narrowest noses	Total group	Widest noses	Narrowest noses	Total group	Widest noses
Stature	170.0	170.3	169.6	161.1	160.7	161.1
Cephalic index	79.6	79.4	80.4	81.9	82.0	81.8
Facial index	89.6	87.0	83.9	87.8	84.7	82.9
Hair form	2.2	2.4	2.6	2.6	2.5	2.5
Hair amount	4.9	5.3	4.0	—	—	—
Arm pigment	6.6	7.8	8.2	6.1	6.4	7.0
Cheek pigment	7.1	8.0	8.6	5.6	7.3	8.6

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TABLE XXXIV. CHARACTERISTICS OF MEN WITH MARKED ENAMEL RIM ON THE INCISOR TEETH

Catalog pigment	Stature	Cephalic index	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
198	168	79.5	95.7	66.1	1	10	5	6
176	168	81.4	91.0	73.7	4	5	4	5
195	176	77.6	86.9	82.7	1	2	9	6
154	—	75.9	88.9	78.4	4	2	4	4
174	174	79.3	87.5	74.5	2	4	5	5
183	165	80.1	90.1	96.1	2	2	4	5
184	173	81.4	94.5	78.7	4	14	4	5
121	169	78.3	93.5	74.6	2	6	4	11
28	173	81.8	75.3	97.8	3	2	11	9
2	173	85.6	81.4	97.8	4	3	11	9
Average	170.6	80.1	88.5	82.0	2.7	5.0	6.1	6.4
Average of total series	170.3	79.4	87.0	81.9	2.4	5.3	7.8	8.0

TABLE XXXV. CHARACTERISTICS OF MEN WITH SLIGHTLY DEVELOPED RIM ON INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
158	166	82.0	95.6	72.1	3	3	4	6
141	172	72.9	92.5	78.2	1	4	11	6
143	—	77.7	91.4	73.7	3	11	5	5
189	169	81.3	91.3	84.3	4	5	4	4
191	169	79.9	85.0	82.8	2	6	4	6
179	167	87.1	85.4	79.6	4	2	4	4
159	172	81.6	84.1	68.4	3	2	4	6
125	164	81.9	85.4	84.0	1	6	6	10
165	167	80.8	89.3	85.7	4	2	7	6
164	167	77.0	90.5	95.9	4	3	4	6
123	166	77.3	87.3	100.00	2	2	10	10
120	163	76.6	80.0	75.9	1	5	12	12
9	178	82.2	75.3	88.5	1	0	11	11
98	174	80.2	89.7	84.9	1	2	11	11
40	176	75.9	—	77.6	1	15	10	9
Average	169.3	79.6	87.3	82.1	2.3	4.5	7.1	7.5
Average of total series	170.3	79.4	87.0	81.9	2.4	5.3	7.8	8.0

12: Sullivan D-4 (no date) 1923 OX6 Marquesas OX6

TABLE XXXVI. CHARACTERISTICS OF WOMEN WITH MARKED ENAMEL RIM ON THE INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
155	154	85.6	82.7	83.3	2	5	6
4	156	86.9	81.4	85.7	1	11	9
182	150	75.3	92.9	81.3	3	4	5
138	152	83.6	92.5	73.7	1	5	5
172	160	76.8	94.2	77.4	2	5	5
Average	154.4	81.6	88.7	80.3	1.8	6.0	6.0
Average of total series	160.7	82.0	84.7	83.6	2.5	6.4	7.3

TABLE XXXVII. CHARACTERISTICS OF WOMEN WITH SLIGHTLY DEVELOPED ENAMEL RIM ON THE INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
13	157	85.0	85.7	74.5	3	10	9
38	166	81.2	77.5	93.3	2	6	9
133	161	81.1	78.9	73.6	2	5	6
126	157	80.7	67.9	76.0	4	10	4
188	158	81.4	97.7	79.2	5	4	4
180	156	80.0	90.0	82.6	1	5	5
192	164	80.2	88.1	75.5	4	5	6
48	167	81.4	87.3	80.0	1	10	11
37	157	88.2	77.8	93.0	3	11	11
32	156	83.3	77.4	79.2	4	10	10
Average	160.0	82.2	84.8	80.7	2.9	7.6	7.5
Average total series	160.7	82.0	84.7	83.6	2.5	6.4	7.3

TABLE XXXVIII. AVERAGE CHARACTERISTICS OF THE TOOTH FORM GROUPS

	MEN			WOMEN		
	Marked Rim	Slight Rim	Total Series	Marked Rim	Slight Rim	Total Series
Stature	170.6	169.3	170.3	154.4	160.0	160.7
Cephalic index	80.1	79.6	79.4	81.6	82.2	82.0
Facial index	88.5	87.3	87.0	88.7	84.8	84.7
Nasal index	82.0	82.1	81.9	80.3	80.7	83.6
Hair form	2.7	2.3	2.4	1.8	2.9	2.5
Hair amount	5.0	4.5	5.3	—	—	—
Arm pigment	6.1	7.1	7.8	6.0	7.6	6.4
Cheek pigment	6.4	7.5	8.0	6.0	7.5	7.3

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Characters Associated With the Enamel on the Upper Incisor Teeth

On account of its high frequency in the Mongoloid types, the enamel rim on the upper incisor teeth is of considerable interest in a study of the Polynesian peoples. In Tables XXXIV, XXXV, XXXVI, XXXVII, and XXXVIII, I have listed the individuals with marked and slight incisor rims. The results are not conclusive. It is clear that this character is associated with a high face and a lighter skin color. The association with other characters is not certain. Many of the individuals with a marked incisor rim are tall, long-headed, high-faced, and narrow-nosed. Those individuals having a slightly developed incisor rim form a most mixed and heterogeneous group.

Characters of Two Marquesan Types

The above analyses of physical characteristics have suffciently demonstrated not only the heterogeneity of the series under consideration, but also the correlations or associations of many characters. While it is still uncertain just what are the affiliations of certain characters such as stature, hair form, and the frequency of the incisor rim, there are in the main two tendencies shown in these associations or correlations which clearly indicate at least two different types. These may be outlined as follows:

TYPE I	TYPE II
Characterized by	Characterized by
1. Taller stature	1. Shorter stature
2. Longer heads	2. Shorter heads
3. Higher faces	3. Lower faces
4. Narrower noses	4. Wider noses
5. Straighter hair	5. More wavy hair
6. More beard	6. Less beard
7. More body hair	7. Less body hair
8. Lighter skin color	8. Darker skin color
9. More frequent incisor rim	9. Less frequent incisor rim

At present it is possible to describe these two types only in terms of each other. In saying that Type I has longer heads I do not mean that they are necessarily markedly dolichocephalic, but that on the average their heads are slightly longer than those of Type II. The other statements likewise are merely comparative. For the present no attention will be paid the other elements of the population.

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ANALYSIS AND CLASSIFICATION OF INDIVIDUALS

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Since it is clear that there are at least two widely different types in the Marquesas, it is desirable to know what proportion of the population is formed by each type and whether or not these two types will include all of the population. This information can be derived only from an analysis of individuals, for it must be assumed that the average characters of the types are to be found in individuals. By this I mean that persons belonging to Type I should be tall, longer headed, higher faced, narrower nosed, lighter skinned, straighter haired, and more heavily bearded than those belonging to Type II. In order that I may not seem to defy the law of chance I wish to make it clear that I would not expect every individual to show all of these characters in the extreme. Yet in a homogeneous race group the correlation or association is closer than is generally realized. A member of a homogeneous race group should approach the mean of the type in a majority of his characteristics.

Since the most promising differences occurred in head form, face form, and nose form, the cephalic, facial and nasal indices were used as the basis of my subdivision. Later the results were supplemented by an analysis on the basis of pigmentation, hair form, and stature.

Persons with a long head, high face, and narrow nose were tentatively placed in Type I. Those with a short head, low face and broad nose were put in Type II. Intermediate types and types that did not fall into the two groups were classed as mixed. Later study on the basis of other characters led me to remove some of the individuals from Type I and Type II and place them in separate groups. They were predominatingly of Type I or Type II, but each showed one or more characteristics of the other group. These were called mixed-near Type I and mixed-near Type II.

One hundred fifty-eight records were available for the analysis. Of the persons measured 28 per cent had long heads, high faces, and narrow noses, 14 per cent being more qualified in two of these characteristics, but slightly divergent in one character or having one character lacking. In their other characters they were apparently related to the individuals in Type I. Thus about 42 per cent of the sample was assigned to Type I.

Of the sample 26 per cent had short heads, low faces, and broad noses and 10 per cent diverged slightly in one character, but were still unmistakably affiliated with Type II. These two types then account for about 78 per cent of this sample. Of the remainder 22 per cent were classed as mixed or unclassifiable. Of these 9 per cent were intermediate in all three characters and were probably mixed types, and three more were very probably also mixtures of Type II. Of the remaining 13 per cent about three individuals approached the Melanesian type. The others do not fit. They are extremely short-headed, but have high or moderately high

12: Sullivan D-4 (no date) 1923 OX6 Marquesas OX6

faces and narrow noses, light skin and well developed beard and body hair. They are the individuals I have previously spoken of as having very possibly artificially deformed heads. But it must be repeated here that this is by no means certain as yet. They are so few in number it is difficult to state their other characteristics with any degree of certainty. It is equally possible that they represent another racial element in the population. If this is true, its segregation will affect somewhat the percentages given above, particularly those of Type I which it most closely approaches in several characteristics.

Inter-Island Distribution of the Two Types

While no pretense is made that any individual I place in Type I or Type II is a pure unmixed member of that type, it is fairly certain that a majority of those individuals classed as Type I or Type II were predominatingly of those types, which serves our purpose just as well. Three independent sortings resulted in only a few disagreements of one class. A few individuals were classed sometimes as near Type I and sometimes as mixed. But not over 5 per cent were the subjects of such changes.

It later occurred to me that it would be of interest to work out the distribution of the two types in the different islands. The results are listed in Table XXXIX, which shows clearly the distribution. Type I is to be found in all of the islands but is less mixed in the southeastern islands of the group. Type II is strongest in Ua Huku, but occurs also in Nuku Hiva, Ua Pou, and to a lesser extent in Hiva Oa. While the series is small and the results cannot be taken literally, the differences are so marked that there can be little doubt that they indicate roughly the true state of affairs. So far as this sample may be relied upon, it would indicate that if these two physical types had different languages and cultures, as they conceivably should have had, the language and culture belonging to Type II should be most clearly recognizable in Ua Huku, Nuku Hiva, and Ua Pou. While it would have unquestionably affected Hiva Oa, it is here and in Tahu Ata and Fatu Hiva that the culture and language of Type I should be found. In Ua Huku, Nuku Hiva, Ua Pou, and to a lesser extent in Hiva Oa there should be found a stratification of the cultures.

I will leave this correlation of the physical and cultural differences to those better acquainted with the details of culture. My purpose in making the above statement is to bring out the fact that the averages obtained in the inter-island grouping cannot be taken as the averages of the two types. The northwestern group contained many individuals belonging to Type I, although Type II was the prevailing type. In the southeastern group there were a few individuals of Type II. For this reason I have separated the material into five groups used above and averaged their characteristics. These are given in Tables XL and XLI.

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Detailed Averages of the Different Types

In this subdivision and grouping all of the material has been used. The averages for Type I are given in the first column. In the second column Type I has been combined with those individuals who were near Type I, but departed from the type in some one or two characters. In column three the averages of these individuals (near Type I) are given separately. In the fourth column have been placed all the mixed, unclassifiable individuals and those near Type I and near Type II. In the succeeding columns are those near Type II, Type II and near Type II, and finally Type II. It will be seen that some individuals are used in more than one column (2, 4, and 7).

An inspection of both Table XL and XLI demonstrates that this subdivision of the material into two types and mixtures thereof has been fairly successful. The averages progress smoothly from Type I to Type II or from Type II to Type I. The mixed individuals give intermediate averages for most characters. From left to right the index of pigmentation decreases, the development of the beard, body hair, and the frequency of the incisor rim also decrease. Hair form is irregular. Stature also does not behave in a convincing manner. Among the women the mixed individuals are the tallest, but with the men the reverse is true. The only other irregularities in the anthropometric results are slight ones in minimum frontal and bigonial diameters and the indices based on them. But these irregularities indicate clearly that there is still a disturbing factor in the series that has not been isolated.

For convenience the averages and differences of Types I and II are placed side by side in Table XLII. Here as elsewhere in this paper a numerical value has been given to certain attribute characters and the results treated statistically. As previously explained, the color values have been numbered from 1 to 14 and the results averaged. The smaller the number is the lighter is the color. Hair form has also been given a value of 1 and wavy hair a value of 2, and so on. A similar treatment was accorded the development of beard and body hair and the incisor rim. In reading Table XLII, it is sufficient to know that in pigmentation a small number indicates a light pigmentation; in hair form a small number indicates straight hair; in beard and body hair development a small number indicates a poor development; and in the incisor rim a small number indicates a low frequency.

The figures given for men and for women in Table XLII agree in emphasizing the enormous differences between Type I and Type II. Of the 24 characters considered, the differences in 20 are sufficiently large to remove doubt of their significance. In only four characters—hair form, minimum frontal, bigonial, and cephalo-facial index—are the differences small and contradictory in the two sexes. Type II is unquestionably darker than Type I, has a poorer development

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of the beard and body hair, and also a less frequent occurrence of the incisor rim. Type II is shorter, has shorter, wider heads, wider and lower faces, and wider and lower noses. As a result of these differences, the cephalic index is greater in Type II, the facial index is about 12 points less on the average, and the nasal index 12 or more points higher. Other consistent differences are smaller fronto-parietal indices and a larger ear index in Type II.

There can be no doubt that at least two separate and radically different groups of associated characters are represented. A study of the photographs of the two groups will add still further to the lists of associated characters. On the basis of measurements and descriptive characters, I have sorted out the photographs as best I could into groups approaching Type I and Type II. I do not urge that any of these be accepted as pure members of either type, although it seems altogether probable that many of them are. For our purpose it will be sufficient to say that in a totality of their characters the men in Plate XXXVI and the women in Plate XXXVIII approach Type I, as I have described it. The men who most clearly approach Type II are shown in Plate XXXVII and the women in Plate XXXIX. Many better eamples of the two types were photographed, but under such adverse conditions that the photographs do not lend themselves well to reproduction. Most of the men represented in Plate XXXVI are fairly typical of Type I. Numbers 7, 8, 10, 13 are very possibly of a different type. They have extremely short heads. In Plate XXXVII numbers 1, 2, and 3 are rather extreme examples of Type II. The other members are probably mixed with various other elements besides Type I. Numbers 3, 4, 7, 9, 11 and 14 are poor examples of the type. The women are much more difficult to select. Numbers 1, 2, 4, 7, 11, 12 and 13, on Plate XXXIX are good examples of Type II. Most of the women in Plate XXXVIII approach fairly closely Type 1, but numbers 5, 6, 9, and 15 are the best representatives. In Plate XL I have placed those who fall in the mixed and unclassified groups. Numbers 2, 5, 11, and 13 represent the extremely short-headed element as do also numbers 8 and 12 of Plate XXXVIII. For comparison a few photographs of persons of mixed Caucasian and Asiatic origin are given in Plate XLI.

A careful study of the photographs suggest many other characters in which the two types differ. Type II has thicker lips and the eyes are peculiar, being less wide open, and several have a suggestion of epicanthic fold. The lower lid of some of the eyes in Type II has a swollen beveled appearance. The outer canthus is somewhat higher than the inner canthus which results in an obliquely placed eye slit. Type II is also heavier and stockier. The neck is short and heavy. Type I, when all Type II characters are removed, are more Caucasoid in appearance. The nasal bridge is higher and the lips are thinner. The hair, too, seems to be straighter in Type I although it should be emphasized here that in neither of these two types

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do we find the stiff straight black hair characteristic of the Chinese, Japanese, and many Malay and American peoples.

TABLE XXXIX. INTER-ISLAND DISTRIBUTION OF TWO PHYSICAL TYPES IN THE MARQUESAS

Island	Type I		Mixed near Type I		Intermediate and unclassifiable		Mixed near Type II		Type II		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
MEN											
Nuku Hiva	0	0	2	18	2	18	2	18	5	46	11
Ua Huku	1	12	0	0	1	12	1	12	5	64	8
Ua Pou	4	20	7	35	1	5	3	15	5	25	20
Hiva Oa	22	63	4	11	7	20	0	0	2	5	35
Tahu Ata	0	0	0	0	0	0	0	0	0	0	0
Fatu Hiva	1	10	2	20	7	70	0	0	0	0	10
Total	28	33	15	18	18	21	6	7	17	20	84
WOMEN											
Nuku Hiva	1	14	0	0	2	28	2	28	2	28	7
Ua Huku	1	10	0	0	0	0	2	20	7	70	10
Ua Pou	1	4	2	7	8	29	4	14	12	44	27
Hiva Oa	10	38	4	15	7	27	2	8	3	12	26
Tahu Ata	2	100	—		—	—		—		—	2
Fatu Hiva	1	50	1	50	—	—		—		—	2
Total	16	21	7	9	17	23	10	13	24	32	74
TOTAL SERIES											
Nuku Hiva	1	5	2	11	4	22	4	22	7	39	18
Ua Hiva	2	11	0		1	5	3	17	12	67	18
Ua Pou	5	10	9		9	19	7	15	17	36	47
Hiva Oa	32	52	8	13	14	23	2	3	5	8	61
Tahu Ata	2	100									2
Fatu Hiva	2	17	3	25	7	58					12
Total	44	28	22	14	35	22	16	10	41	26	158

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TABLE XL. AVERAGE CHARACTERS OF THE DIFFERENT PHYSICAL TYPES
MEN

Character	Type I	Type I and near Type I	Near Type I	Mixed and near Type I and near Type II	Mixed	Near Type II	Type II and near Type II	Type II
Relative arm pigment	6.4	6.9	8.0	7.9	7.3	9.5	9.8	9.9
Relative cheek pigment	6.3	7.2	8.4	8.2	7.6	9.8	9.5	9.4
Relative hair form	2.4	2.5	2.5	2.3	2.2	2.1	2.5	2.6
Development of beard [a]	3.3	3.4	3.5	2.8	2.2	2.2	2.0	2.0
Development of body hair	2.8	2.9	3.0	2.6	2.2	3.0	2.1	1.8
Rim on lateral incisor [b]	1.0	.9	.4	.5	.6	.0	.4	.4
Rim on mesial incisor	1.1	.9	.4	.5	.6	.0	.4	.5
Stature	171.0	171.0	171.1	169.6	168.0	170.8	170.7	170.6
Head length	195.0	194.8	194.6	192.5	191.3	191.1	191.3	191.5
Head width	151.0	151.4	152.5	153.6	154.5	153.6	155.1	155.6
Minimum frontal	102.1	102.5	103.4	103.7	103.1	106.5	103.7	102.7
Face width	141.7	142.1	142.9	143.2	143.0	144.6	145.5	145.8
Bigonial diameter	109.4	110.1	111.5	109.9	108.7	109.8	109.1	108.8
Face height	129.4	128.6	126.6	123.9	123.9	118.3	116.8	116.3
Nasal height	56.2	55.2	53.3	52.5	52.3	51.3	50.2	49.8
Nasal width	42.7	42.9	43.3	43.2	43.4	42.6	43.6	43.9
Cephalic index	77.6	77.9	78.4	79.9	80.9	80.4	81.1	81.3
Fronto-parietal index	67.6	67.8	68.3	67.7	66.7	69.3	66.8	66.0
Cephalo-facial index	94.0	93.8	93.7	93.2	92.5	94.2	93.8	93.7
Zygomatico-frontal index	72.1	72.2	72.5	72.5	72.1	73.6	71.3	70.5
Zygomatico-mandibular index	77.1	77.4	77.9	76.7	75.8	76.1	74.7	74.2
Facial index	91.3	90.6	89.0	86.3	86.6	81.8	80.3	79.8
Nasal index	76.6	78.3	81.9	82.7	83.4	82.8	87.1	88.7
Ear index	49.2	48.6	47.8	48.0	47.9	48.9	50.2	50.6
Number of men	28	43	15	39	18	6	23	17

[a] Beard and body hair are considered separately from here on, so that 9 is the maximum index.

[b] The incisor rim was indicated as follows: 0 = absent, 1 = slight, 2 = medium, 3 = marked. These values were totaled and divided by the number of cases. The average values are small here in all of the types.

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TABLE XLI. AVERAGE CHARACTERS OF THE DIFFERENT PHYSICAL TYPES OF WOMEN

Character	Type I	Type I and near Type I	Near Type I	Mixed and near Type I and near Type II	Mixed	Near Type II	Type II and near Type II	Type II
Relative arm pigment	5.5	5.3	5.0	6.0	6.1	6.6	7.2	7.4
Relative cheek pigment	5.8	6.0	6.1	7.0	7.4	6.8	8.1	8.5
Relative hair form	3.6	2.6	1.4	2.2	2.2	2.8	2.5	2.5
Rim on lateral incisor	.5	.7	1.0	.2	.1	.0	.1	.1
Rim on mesial incisor	.9	.7	.1	.3	.2	.4	.3	.2
Stature	160.2	160.8	162.1	162.0	162.9	160.3	157.2	155.1
Heal length	186.4	186.4	185.1	183.8	184.7	181.4	180.4	180.0
Head width	145.1	147.8	148.5	150.5	150.4	152.0	151.6	151.4
Minimum frontal	101.2	101.1	101.1	104.6	103.9	108.5[a]	108.0[a]	99.0
Face width	132.8	132.8	132.7	136.0	136.6	137.2	137.0	136.9
Bigonial diameter	101.7	100.9	99.0	103.3	103.7	105.5	104.1	103.5
Face height	120.4	119.6	117.8	116.2	117.8	112.2	110.1	109.2
Nose height	52.2	52.0	51.7	49.9	50.2	48.3	45.7	44.6
Nose width	39.3	39.6	40.4	40.8	40.9	40.8	40.7	40.7
Cephalic index	79.2	79.5	80.3	81.9	81.5	83.9	84.1	84.2
Front-parietal index	68.6	68.4	68.1	69.5	69.1	71.4	67.1	65.4
Cephalo-facial index	89.9	89.7	89.4	90.7	91.5	90.3	90.4	90.5
Zygomatico-frontal index	76.2	76.2	76.3	76.9	75.9	79.1	74.3	72.2
Zygomatico-mandibular index	76.6	76.0	74.6	75.8	75.8	76.8	75.9	75.5
Facial index	90.7	90.1	88.8	85.5	86.3	81.8	79.8	78.9
Nasal index	75.2	76.2	78.6	82.1	81.8	84.7	89.5	91.6
Ear index	47.7	48.4	50.5	50.1	50.1	49.7	50.0	50.1
Number of women	16	23	7	34	17	10	34	24

[a] Due to two extreme cases 121 and 125.

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TABLE XLII. COMPARISON OF THE AVERAGES AND DIFFERENCES OF TYPES I AND II

	Type I Men	Total Series, Men	Type II Men	Type I Women	Total Series, Women	Type II Women	Difference Between Types I and II Men	Difference Between Types I and II Women
Relative arm pigment	6.4	8.2	9.9	5.5	6.4	7.4	+ 3.5	+ 1.9
Relative cheek pigment	6.3	8.6	9.4	5.8	7.3	8.5	+ 3.1	+ 2.7
Relative hair form	2.4	2.6	2.6	3.6	2.5	2.5	+ .2	— 1.1
Development of beard	3.3	3.6	2.0	.....	.....	.....	— 1.3	.....
Development of body hair	2.8	2.5	1.8	.....	.....	.....	— 1.0	.....
Rim on lateral incisor	1.0	.7	.4	.5	.3	.1	— .6	— .4
Rim on mesial incisor	1.1	.7	.5	.9	.4	.2	— .6	— .7
Stature	171.0	170.3	170.6	160.2	160.7	155.1	— .4	— 5.1
Head length	195.0	193.2	191.5	186.4	183.2	180.0	— 3.5	— 6.4
Head width	151.0	153.2	155.6	145.1	150.1	151.4	+ 4.6	+ 6.3
Minimum frontal	102.1	103.2	102.7	101.2	102.1	99.0	+ .6	— 2.2
Face width	141.7	143.2	145.8	132.8	135.5	136.9	+ 4.1	+ 4.1
Bigonial diameter	109.4	109.5	108.8	101.7	103.0	103.5	— .6	+ 1.8
Face height	129.4	124.6	116.3	120.4	114.5	109.2	—13.1	—11.2
Nasal height	56.2	53.1	49.8	52.2	48.6	44.6	— 6.4	— 7.6
Nasal width	42.7	43.2	43.9	39.3	40.4	40.7	+ 1.2	+ 1.4
Cephalic index	77.6	79.4	81.3	79.2	82.0	84.2	+ 3.7	+ 5.0
Fronto-parietal index	67.6	67.4	66.0	68.6	68.0	65.4	— 1.6	— 3.2
Cephalo-facial index	94.0	93.5	93.7	89.9	90.3	90.5	— .3	+ .6
Zygomatico-frontal index	72.1	72.0	70.5	76.2	75.2	72.2	— 1.6	— 4.0
Zygomatico-mandibular index	77.1	76.8	74.2	76.6	75.9	75.5	— 2.9	— 1.1
Facial index	91.3	87.0	79.2	90.7	84.7	78.9	—12.1	—11.8
Nasal index	76.6	81.9	88.7	75.2	83.6	91.6	+12.1	+16.4
Ear index	49.2	48.9	50.6	47.7	49.6	50.1	+ 1.4	+ 2.4
Number	28	84	17	16	74	24	.....	.....

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A DETAILED ANALYSIS OF THE SAMOANS

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In view of the clear evidences of at least two types in the Marquesas it becomes highly important to reconsider the Samoans and Tongans in order to determine if possible the presence or absence of Type II. It is not only probable but altogether likely that some of the diversity I attributed to Melanesian intermixture may be due to the presence of Type II since the differences are in the same characters.[10] While Type II cannot be considered Melanesian it has certain Melanesian, Papuan, and negroid characters which might very easily be mistaken for Melanesian influence. I refer, of course, to the darker skin, more wavy hair, low and broad faces, low and broad noses, and thick lips. As a matter of fact this leaves but one or two criteria with which to distinguish between Melanesian intermixture and the influence of Type II. This must be decided largely upon the basis of head form and relative curliness of the hair. With the possibility of head deformation in Tonga and Samoa, the problem is still further complicated.

It will be necessary to test further the homogeneity of the Samoan and Tongan series by subdividing them into different stature, head form, face form, and nose form groups, as I have done for the Marquesan material.

TABLE XLIII. AVERAGE CHARACTERISTICS OF THE STATURE GROUPS OF SAMOAN MEN

Characters	18 Tallest	Total series	20 Shortest
Cephalic index	81.2	81.3	82.0
Fronto-parietal index	68.0	66.8	67.1
Cephalo-facial index	93.9	94.2	93.4
Facial index	91.2	89.9	89.9
Nasal index	72.5	73.6	73.7
Rim on lateral incisor	.33	.76	1.10
Rim on mesial incisor	.22	.44	.63
Arm pigment	6.1	7.1	8.6
Cheek pigment	9.3	10.3	10.2
Hair form	1.9	1.7	1.6
Beard development	5.8	5.2	5.4
Body hair development	6.2	5.2	5.0
Elevation of nasal bridge [a]	2.2	1.9	1.8
Axes of nostrils [b]	2.3	2.3	2.3

[a] The higher the number the higher the nasal bridge.
[b] The larger the number the more transverse the nostrils.

[10] Op. cit.

[pp. 197-232 have been omitted from this source
-Analyst]

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SUMMARY

1144 The modern "Polynesians" of the Marquesas, Samoa and Tonga are a mixed people. This fact accounts for the great diversity of opinion regarding their racial origins and affinities. In addition to the Polynesian population there is a second type resembling the Indonesian peoples of Malaysia, and a third extremely short-headed element. This paper deals mainly with the Polynesian and Indonesian types. The unrecognized presence of the Indonesian type has given rise to the theories of Indonesian affinities of the Polynesian people.

When the Indonesian element is removed, the Polynesian is more strikingly Caucasoid. Some of the Caucasoid traits of the Polynesians may be due to the presence of a third type not yet isolated. At present it seems best to regard the Polynesian type as an offshoot of the primitive Mongoloid stem, very close to where some Caucasians branched off.

The Indonesian type is usually regarded as Mongoloid also but is strongly divergent in the direction of the Negro. The resulting hybrid of the Polynesian and Indonesian types is much more Mongoloid in appearance than is either of the parental types.

The Polynesian and Indonesian types cannot be considered as close relatives in a physical sense. Indeed, their only claim for relationship is that both may be somewhat hesitatingly classed as divergent Mongols. But even if such a classification is eventually proved to be justified, the relationship is a very distant one.

In the Marquesas are marked inter-island differences in the distribution of these two types. The Indonesian type is for the most part confined to the islands of Ua Huku, Nuku Hiva, and Ua Pou. The Polynesian is also present in these islands, but is much less mixed with the Indonesian element in the southern islands of the group: Tahu Ata, Fatu Hiva, and Hiva Oa. In Tonga also the Indonesian element is much more concentrated in the northern island groups, Haapai and Vavau, but especially in Haano. No certain inter-island differences were found in Samoa.

These two types do not exhaust the possibility of finding other physical types in Polynesia. There is unmistakable evidence of Melanesian influence, particularly in Tonga. The Idonesian type has many Negroid characteristics, which have lead to an exaggerated opinion as to the amount of Melanesian blood in Polynesia.

In addition there is an extremely short-headed element in Polynesia, referred to by Dixon as Malayan; by Elliot-Smith as Proto-Armenoid; and by others as Indonesian, or Alpine. Apparently it is this element of the population that Deniker refers to as Polynesian. At present its claim to distinction as a separate type seems to consist chiefly of extremely short heads, associated with narrow faces,

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144 narrow noses, light skin and well developed beard and body hair. As yet I have not been able to establish a sufficiently large group of associated characters to warrant its discussion. It seems probable, however, that this type may account for some of the Caucasoid traits of the Polynesians. This, as well as many other phases of the Polynesian problem, needs further study in the areas in which the people are more characteristic of this type.

In a marginal area like Polynesia it is possible to find individual representatives of nearly all the races living in and around the Pacific. A study of the photographs in this and other papers on Polynesia will show that this possibility is realized to some extent in the Marquesas, Samoa, and Tonga. but to discuss them at present would be to magnify their importance. I have confined my efforts to those types whose presence could be unmistakably demonstrated in sufficient number to warrant the assumption that they had played an important part in the history or prehistory of Polynesia. I am not at all sure that I have isolated all of these elements even, in the three island groups considered here. Furthermore, it is probable that future studies may result in some modification in the characteristics I have assigned to the two main types discussed in this paper. The relative proportions of the different types given in this paper are of course tentative for it is only when it has been possible to reconstruct the various elements of the population in detail that it will be practicable to give definite estimates of their relative frequencies.

128 141 ×142 144 In order that this paper may be of greater permanent value to those who do future work in Polynesia, or who may be inclined to carry my analysis further, I have presented the data and analyses in considerable detail. The extent of this detail may discourage those whose interest is only casual from hunting for the points which may be of special interest to them. For this reason I will briefly recapitulate the points of more general interest and indicate the section of the paper in which more detail on these points can be found.

The Marquesan material when seriated shows no tendency to form normal frequency distributions. The bimodal tendency encountered in Tonga is here encountered in an extended and exaggerated degree. Nearly every character is bimodal or multimodal. The range is enormous especially in the nasal, facial and cephalic indices. (See p. 145.) This condition is emphasized by the standard deviations and coefficients of variation which are greatly in excess of those for the Samoan and Tongan data. (See p. 165.)

141 ×142 144 The Marquesans differ somewhat in their average characters from the Samoans and the Tongans. Their hair is more wavy, their skin is darker, they are more glabrous, they have more transversely placed nostrils, the enamel rim on the incisor teeth is less frequent, they are shorter in stature, have longer heads, their

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faces are narrower, but markedly lower, their bigonial diameters are greater and their noses are narrower and lower. (See p. 160.)

In the three southeastern islands of the group (Fatu Hiva, Tahu Ata, and Hiva Oa) the average stature is less, the minimum frontal diameter is less, the face width is smaller, but the height is much higher, the nose is higher and narrower than in the northwestern islands of the group. The skin color is lighter also. The differences are too great and far-reaching to be considered as local differentiation and indicate a non-homogeneous group. (See pp. 165-8.)

A detailed analysis showed two main tendencies in the association of characters which I have designated as follows:

TYPE I	TYPE II
Characterized by:	Characterized by:
1. Taller stature	1. Shorter stature
2. Longer heads	2. Shorter heads
3. Higher faces	3. Lower faces
4. Narrower noses	4. Wider noses
5. Straighter hair (?)	5. More wavy hair (?)
6. More beard	6. Scant beard
7. More body hair	7. Scant body hair
8. Lighter skin color	8. Darker skins
9. More frequent incisor rim	9. Infrequent incisor rim. (See p. 187).

On the assumption that the cephalic, facial, and nasal indices were the most distinctive anthropometric traits of these two types, the individuals were analyzed and classified as Type I, Type II or mixed and unclassified. That this analysis and classification was partly successful is indicated by the resulting averages of these groups. Marked and certain differences were found in twenty of the twenty-four characters studied. They emphasize the difference in the facial and nasal indices which amount to 12 points or more on the average. The differences in head form are less marked. Type I is mesocephalic and Type II is slightly brachycephalic. Type II also has thicker lips and less wide open eyes than Type I.

Type I occurs in all of the islands, but is least mixed in Tahu Ata, Fatu Hiva, and Hiva Oa. Type II is the dominant type in Nuku Hiva, Ua Huku, and Ua Pou. There is a residue of extremely short heads that are not accounted for by either or both of these types. (See p. 188.)

A re-analysis of the Samoan material shows that Type I is an important type, but that Type II is also present here to some extent. The gap between the two types is not so wide as in the Marquesas. This is taken to mean that Type II has never been so important numerically in Samoa or has been pretty thoroughly mixed with Type I or perhaps both of these things. No apparent inter-island diffrences occur in the frequency of these two types. But since the sample was mainly from Upolu this cannot be taken as final. In Samoa also there is a still larger residue of extremely short heads. (See p. 202.)

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144 X142 144

A more detailed analysis of the Tongan data indicates that Type II is also present in Tonga. The presence of this type which has many Negroid characters is responsible for much of the heterogeneity attributed to Melanesian influence in a previous paper. Type II is more distinct here than in Samoa, but less so than in the Marquesas. Here again Type II has not become uniformly distributed throughout the archipelago, but is concentrated more strongly in the northeastern groups of Vavau and Haapai and especially in Haano. These two types account for about 60 per cent of the population of Tonga. The remaining 40 per cent contained a large number of individuals with short heads, narrow faces and narrow noses. (See p. 209.)

Type I is the true Polynesian. Its relationship to the Aino is suggested. When Type II is removed the Polynesians are much more Caucasoid than they have hitherto been described in this series, but this approach to the Caucasian may be due to the fact that there is a third type in Polynesia carrying these traits. They seem to stand intermediate between the Caucasians and the Mongols in a totality of their characters. It is possible to regard the Polynesian as Mongoloid only on the assumption that the primitive Mongoloid type gave rise to the Caucasian types. In this sense the Polynesian may be regarded as a near-Caucasian type or as the result of one of nature's attempts to evolve a Caucasian type. They at least must have branched off very near to where the Caucasians branched off. (See pp. 215-7.)

Type II is called tentatively an Indonesian type. It is commonly looked upon as Mongoloid, but its negroid characters are emphasized. It is also pointed out that these two types are not very closely related and have very little in common except the fact that both may be somewhat hesitatingly classified as divergent Mongoloid types, the one in the Caucasian direction, and the other in the direction of the negro. Earlier theories of relationships of these two types are due in part to the unrecognized presence of an Indonesian type in Polynesia and a Polynesian type in Indonesia combined with an unfortuate confusion in anthropological terminology.

These two types do not entirely exhaust the possibility of other types in Polynesia. Among other things there is an extreme degree of brachycephaly, or short headedness, to be explained. It seems very probable that this condition is due to the presence of a third type, but discussion of this point is reserved for the Hawaiian paper of this series, since Hawaii is a stronghold of this element. Although the characteristics of this type in detail are not yet certain, there seems to be associated with them short heads, high, narrow faces, narrow noses, light skins and a well-developed beard and body hair. The isolation of this type will probably modify some of the characteristics given to the two types which form the subject of this paper.

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INDIVIDUAL RECORDS

Individual records of the Marquesans, Samoans and Tongans on which the comparative studies of this paper are based are given in the accompanying tables. The Samoan and Tongan observations and measurements were made by E. W. Gifford and W. C. McKern; the Marquesan observations and measurements, by Dr. and Mrs. E. S. Handy; and the tables were compiled by Bessie P. Sullivan. The symbols used in the tables are as follows:

KEY TO TABLES OF INDIVIDUAL RECORDS

Explanation of Tables

A catalog number
B sex
C age
D island of birth
E hair form
F incisor rim, laterals
G incisor rim, mesials
1 stature
2 head length
3 head width
4 minimum frontal diameter
5 face width, maximum
6 bigonial diameter
7 anatomical face height
8 nasal height
9 nasal width

I cephaic index
II transverse fronto-parietal index
III transverse cephalo-facial index
IV zygomatico-frontal index
V zygomatico-mandibular index
VI anatomical facial index
VII nasal index

Body of tables

Under B: m = male; f = female

Under D: Island of Birth

Samoa
1—Upolu
2—Savaii
3—Fiji

Tonga
1—Niuatoputapu
2—Niuafoou
3—Vavau
4—Haapai
5—Tongatabu
6—Eua

Marquesas
1—Nuku Hiva
2—Ua Huku
3—Ua Pou
4—Hiva Oa
5—Tahu Ata
6—Fatu Hiva

Under E: hair form
1—straight
2—low waves
3—deep waves
4—curly
5—frizzly
6—woolly

Under F and G: enamel rim on incisor teeth
0—absent
1—slight
2—medium
3—marked

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
14	m	46	1	1	—	—	163	182	150	108	143	105	120	55	40	82.4	72.0	95.3	75.5	73.4	83.9	72.7
29	m	48	1	1	0	0	168	190	156	104	142	110	121	50	41	82.1	66.7	91.0	73.2	77.5	85.2	82.0
2	m	21	1	4	3	3	.....	197	160	101	140	.....	114	45	44	85.6	63.1	87.5	72.1	.....	81.4	97.8
28	m	20	1	3	3	3	173	187	153	107	146	103	110	46	45	81.8	69.9	95.4	73.3	70.6	75.3	97.8
62	m	43	1	1	0	0	162	180	155	100	145	103	117	50	47	86.1	64.5	93.6	69.0	71.0	80.7	94.0
116	m	45	1	1	0	0	163	181	153	100	140	107	119	48	43	84.5	65.4	91.5	71.4	76.4	85.0	89.6
111	m	60	1	1	—	—	161	196	156	93	153	116	117	56	49	79.6	59.6	98.1	60.8	75.8	76.5	87.5
109	m	48	1	4	—	—	169	210	152	103	155	118	130	55	46	72.4	67.8	102.0	67.1	76.1	83.9	83.6
26	m	50	1	—	—	—	176	187	153	99	140	.....	124	55	43	81.0	64.7	91.5	70.7	.....	88.6	78.2
107	m	24	1	4	—	—	172	188	158	103	142	108	121	51	42	84.0	65.2	89.9	72.5	76.1	85.2	82.4
31	m	59	1	1	—	—	171	200	160	108	148	112	120	54	47	80.0	67.1	92.5	73.0	75.7	81.1	87.0
12	m	30	2	1	0	0	173	199	152	112	146	.....	120	52	43	76.4	73.7	96.0	76.7	.....	82.2	82.7
5	m	21	2	4	0	0	171	192	143	100	139	.....	118	52	41	74.5	69.9	97.2	71.9	.....	84.9	78.8
110	m	22	2	2	0	0	174	186	159	93	150	114	118	53	41	85.5	58.5	94.3	62.0	76.0	78.7	74.6
27	m	35	2	4	—	—	184	190	164	113	152	115	120	50	43	86.3	68.9	92.7	74.3	75.7	79.0	86.0
9	m	19	2	1	1	1	178	197	162	105	146	113	110	52	46	82.2	64.8	90.1	71.9	77.4	75.3	88.5
17	m	54	2	2	0	0	178	200	155	100	148	114	132	58	44	77.5	64.5	95.5	67.6	77.0	89.2	75.9
23	m	22	2	5	0	0	167	197	154	100	137	98	114	51	40	78.2	64.9	89.0	73.0	71.5	83.2	78.4
16	m	39	3	2	0	0	170	190	149	100	140	112	129	52	41	78.4	73.2	94.0	71.4	80.0	92.1	78.8
54	m	30	3	1	0	0	172	207	165	110	149	110	130	54	47	79.7	66.7	90.3	73.8	73.8	87.2	87.0
86	m	25	3	4	0	0	166	200	155	118	130	114	116	50	43	77.5	76.1	83.9	90.8	87.7	89.2	86.0
94	m	65	3	2	—	—	175	200	153	104	146	115	129	57	44	76.5	88.0	95.4	71.2	78.8	88.4	77.2
103	m	64	3	1	0	0	170	193	145	112	135	102	124	52	40	75.1	77.2	93.1	83.0	75.6	91.8	76.9
104	m	42	3	4	0	0	173	188	153	103	143	113	135	60	48	81.4	67.3	93.5	72.3	79.0	94.4	80.0
55	m	20	3	5	0	0	167	192	153	102	143	111	103	42	45	79.7	66.7	93.5	71.3	77.6	72.0	107.1
68	m	25	3	2	0	0	178	195	154	111	146	111	118	49	46	79.0	72.1	94.8	76.0	76.0	80.8	93.9
89	m	20	3	4	0	0	174	197	158	112	147	105	115	53	47	80.2	70.9	93.0	76.2	71.4	78.2	88.7
45	m	29	3	1	0	0	175	194	160	106	149	105	126	49	43	82.5	66.2	93.1	71.1	70.5	84.6	87.8
57	m	30	3	2	0	0	166	190	153	100	143	106	111	47	38	81.6	66.4	96.8	68.7	76.0	74.0	80.8
66	m	31	3	3	0	0	164	202	155	100	143	106	118	48	41	76.7	64.5	92.3	69.9	74.1	82.5	83.4
40	m	41	3	1	1	1	176	203	154	100	146	111	.....	58	45	75.9	64.9	94.8	68.5	76.0	.....	77.6
98	m	33	3	1	1	1	174	197	148	105	145	110	130	53	45	80.2	66.5	91.8	72.4	75.9	80.7	84.9
88	m	32	3	4	—	—	169	192	156	110	140	116	127	58	46	81.2	70.5	89.7	78.1	82.9	90.7	79.3
78	m	60	3	1	—	—	176	197	159	102	140	108	133	57	...	80.7	64.2	88.0	72.9	77.1	95.0	.....
58	m	60	3	2	—	—	.....	204	157	104	157	110	.....	59	46	77.0	66.2	100.0	66.2	70.1	.....	78.0
65	m	24	3	1	—	—	172	202	150	97	145	110	123	52	44	74.3	64.7	96.7	66.9	73.9	84.8	84.6
46	m	40	3	5	0	0	174	182	151	105	148	106	129	51	43	83.0	69.5	98.0	71.0	71.6	87.2	88.2
42	m	22	3	1	0	0	172	188	152	103	142	113	110	49	38	80.8	67.8	93.4	72.5	79.6	77.5	77.6
41	m	40	3	1	—	—	163	190	149	108	142	110	110	51	41	78.4	72.5	95.3	76.1	77.5	77.5	78.8
159	m	21	4	3	1	1	172	190	155	97	145	110	122	57	39	81.6	62.6	93.6	66.9	75.9	84.1	69.4
179	m	36	4	4	1	1	167	178	155	106	144	119	123	54	43	87.1	68.4	92.9	73.6	82.6	85.4	79.6
191	m	40	4	2	1	1	169	194	155	97	147	112	125	58	48	79.9	61.6	94.8	66.0	76.2	85.0	82.8
183	m	24	4	2	3	3	165	186	149	97	141	114	127	51	49	80.1	65.1	94.6	68.8	80.8	90.1	96.1
193	m	35	4	2	0	0	164	178	152	97	137	100	126	49	43	85.4	63.8	90.1	70.8	73.0	92.0	87.8
152	m	29	4	2	0	0	177	186	156	102	147	117	127	55	39	83.9	65.4	94.2	69.4	79.6	86.4	70.9
173	m	38	4	2	0	0	163	188	165	105	143	112	123	53	41	87.8	63.6	86.7	73.4	78.3	86.0	77.4

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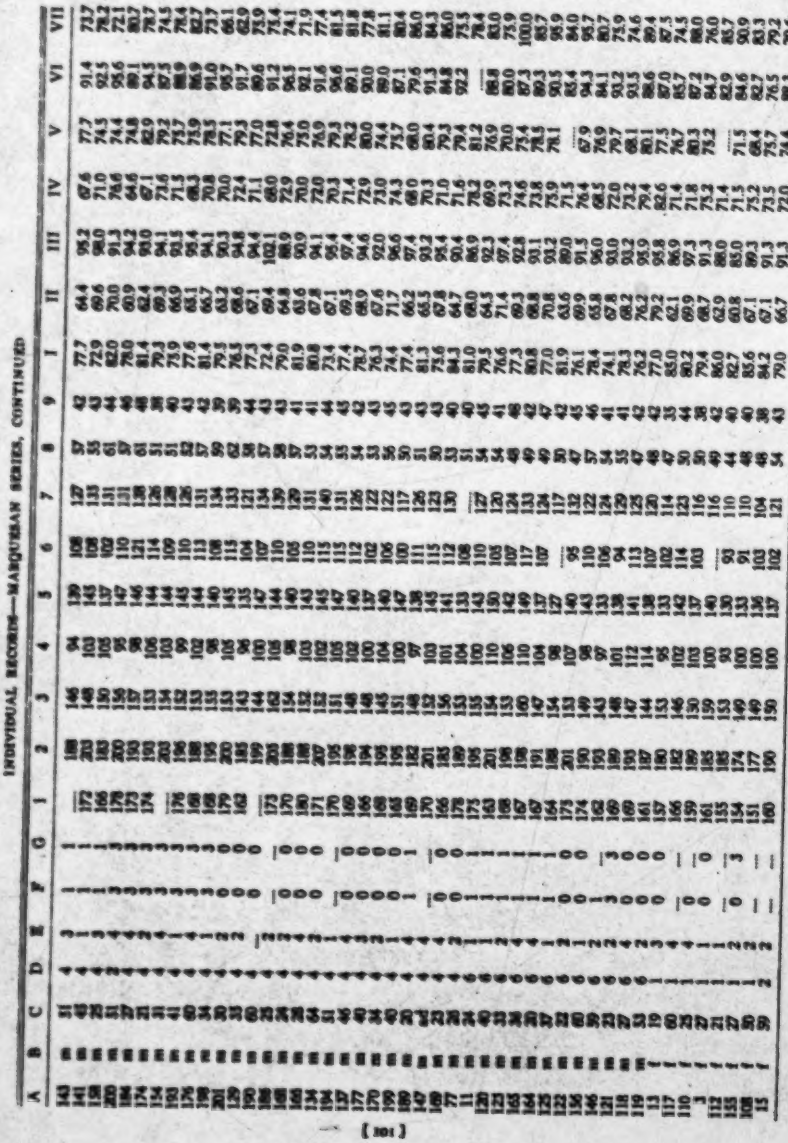
141
142x
144

INDIVIDUAL RECORDS—MARQUESAN SERIES, CONTINUED



12: Sullivan D-4 (no date) 1923 OX6 Marquesas OX6

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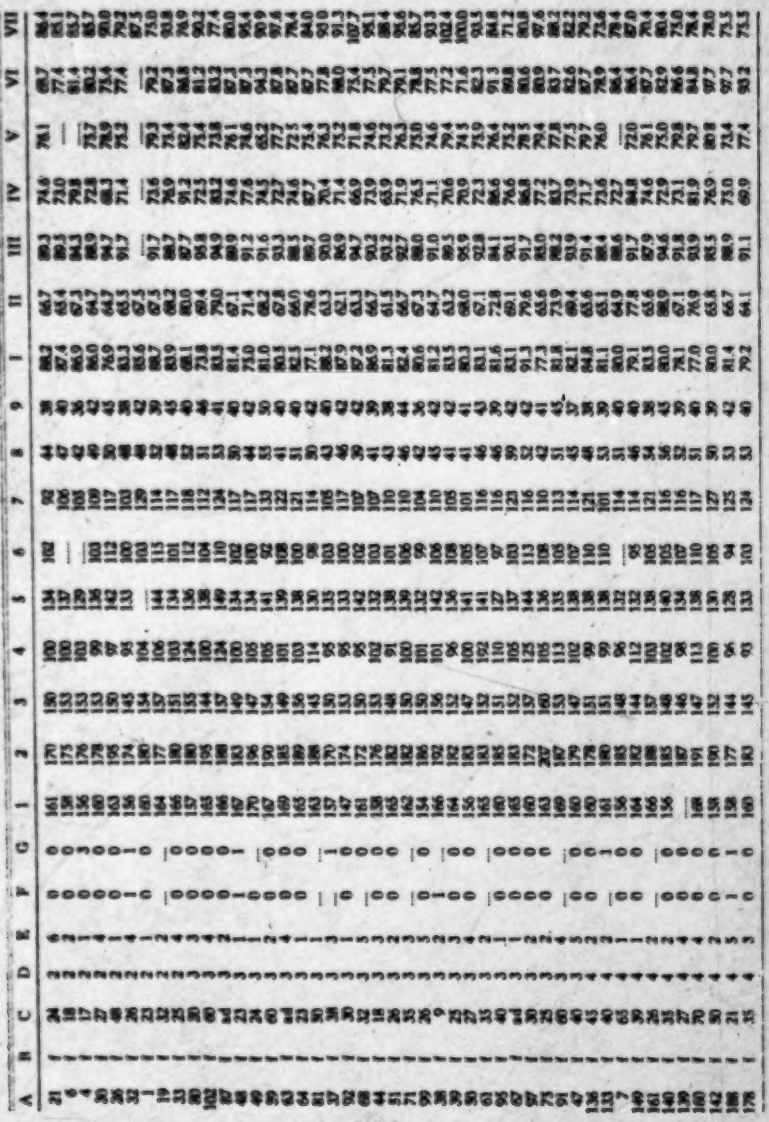
X142
144



INDIVIDUAL RECORDS—MARQUESAN SERIES, CONTINUED

141
142x
144

INDIVIDUAL RECORDS—MARQUESAN SERIES, CONTINUED

INDIVIDUAL RECORDS—SAMOAN SERIES

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[pp. 242-247 have been omitted from this source. -Analyst]

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EXPLANATION OF PLATES

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The catalog numbers of the individuals illustrated are here given. By referring to the Appendix complete details as to stature, cephalic, facial, and nasal indices, and other measurements may be obtained.

PLATE I—POLYNESIAN MEN

1—No. 16
2—No. 100
3—No. 137
4—No. 128 Chief
5—No. 143
6—No. 158
7—No. 104
8—No. 88
9—No. 146
10—No. 184
11—No. 58
12—No. 194
13—No. 88
14—No. 146
15—No. 40

PLATE II—MEN WITH A LARGE INDONESIAN ELEMENT

1—No. 28 marked incisor rim
2—No. 5
3—No. 2
4—No. 11
5—No. 27 part-Hawaiian
6—No. 9
7—No. 42
8—No. 55
9—No. 11
10—No. 28
11—No. 42
12—No. 55
13—No. 9
14—No. 27
15—No. 2

PLATE III—POLYNESIAN WOMEN

1—No. 126
2—No. 110—part-Hawaiian
3—No. 7
4—No. 145
5—No. 81
6—No. 182 marked incisor rim
7—No. 180
8—No. 148
9—No. 172 marked incisor rim
10—No. 15
11—No. 151
12—No. 196
13—No. 192
14—No. 60
15—No. 139

PLATE IV—WOMEN WITH A LARGE INDONESIAN ELEMENT

1—No. 50
2—No. 44
3—No. 3 part-Hawaiian
4—No. 38
5—No. 51
6—No. 1
7—No. 22
8—No. 6
9—No. 47
10—No. 21 frizzly hair, but cephalic index 88.2
11—No. 44
12—No. 50
13—No. 35
14—No. 6
15—No. 51

12: Sullivan D-4 (no date) 1923 OX6 Marquesas OX6

115
144
128

PLATE V—MIXED AND UNCLASSIFIED TYPES

1—No. 102
2—No. 161
3—No. 26
4—No. 48
5—No. 13
6—No. 59 } long heads, high faces,
7—No. 49 } and broad noses
8—No. 153
9—No. 23
10—No. 54
11—No. 152
12—No. 31
13—No. 116
14—No. 29
15—No. 14

PLATE VI—TYPES MIXED WITH CAUCASIANS AND ASIATICS

1—one-half Chinese
2—one-half Chinese
3—part-Chinese
4—part-Chinese
5—one-half Chinese
6—one-half Chinese
7—one-half Chinese
8—one-half Chinese
9—one half Chinese
10—one-half Chinese
11—one-quarter white, one-quarter Tahitian
12—one-quarter white one-quarter Tahitian
13—one-half English
14—
15—one-quarter Spanish, one-quarter French

ERRATA

In "Marquesan Somatology," by Louis R. Sullivan, B. P. Bishop Mus. Mem., Vol. IX, number 2, 1923, Plates XXXVI-XLI should read "Volume IX" instead of "Volume VIII."

[Errata have been noted on plates —Analyst]

X-142
302
241
IX

TYPE 1—POLYNESIAN MEN OF THE MARQUESAS. THESE MEN ARE CHARACTERIZED BY DENSE MOUSTACHES AND A MODERATE BEARD. THE BEARDS ARE MODERATELY LONG, THE FACES HIGH AND THE NOSES RELATIVELY NARROW. THE SKINS ARE A LIGHT YELLOWISH BROWN. THERE IS LITTLE PROGNATHISM AND THE CHINS ARE FAIRLY WELL DEVELOPED. NOS. 2, 6, 9, 14 AND 15 ARE THE BEST EXAMPLES OF TYPE 1. NOS. 7, 8, 10 AND 13 ARE EXAMPLES OF A THIRD TYPE CHARACTERIZED BY SHORT HEADS.

Photographs by Handy and Linton.

[P. 112]
[end plate 1]

12: Sullivan D-4 (no date) 1923 . COLL Marquesas COLL

YM2
BCO
JW

TYPE II—THE INDONESIAN MEN OF THE MARQUESAS. NOS. 1, 2, AND 3 WITH THEIR PROFILES IN NOS. 10 AND 15 ARE PROBABLY THE BEST REPRESENTATIVES OF THIS TYPE. THEIR LIPS, NOSES, AND FACE PROPORTIONS ARE NOTABLE. THEIR SKINS ARE A DARKER BROWN THAN THAT OF THE POLYNESIANS.

Photographs by Handy and Linton.

[p. 119]

[end plate 27]

H. Sullivan D-4 (no date) 1923 OKS Marquesas OKA

X-N2
302
241

12: Bulletin 2-4 (no date) 1923 OSU Marquesas OSU

[p 114]

TYPE I—POLYNESIAN WOMEN OF THE MARQUESAS. THE HAIR OF THESE WOMEN FOR THE MOST PART IS STRAIGHT OR ONLY SLIGHTLY WAVY. THE THICKNESS OF THEIR LIPS IS MORE NOTICEABLE THAN IN THE MEN OF THIS TYPE. SOME OF THE WOMEN ARE OF MIXED BLOOD. NOS. 5, 6, 9 AND 15 ARE THE BEST REPRESENTATIVES OF THE POLYNESIAN TYPE. NOS. 8 AND 12 HAVE VERY SHORT HEADS.

Photographs by Handy and Linton.

[end plate 3]

X
MP
362
741

TYPE II—INDONESIAN WOMEN OF THE MARQUESAS. NOS. 1, 2, 4 AND 7, WITH THEIR PROFILES IN 11, 12, AND 13 ARE THE BEST EXAMPLES OF THIS TYPE. NONE OF THIS HAIR CAN BE CALLED CURLY. WITH THE EXCEPTION OF NO. 10, WHO HAS FRIZZLY HAIR, THIS TYPE IS CHARACTERIZED BY HAIR WITH A MODERATE WAVE. NO. 10 IS NEGROID IN APPEARANCE, BUT HAS A CEPHALIC INDEX OF 80.

Photographs by Handy and Linton.

[p. 115]

[End page 115]

Bishop Museum D-4 (no date) 1923 COX Marquesas COX6

X 392
392
291 IX

MIXED AND UNCLASSIFIED TYPES. SEVERAL OF THE WOMEN HAVE LONG HEADS, HIGH FACES, AND BROAD NOSES. NO. 9 HAS THE NEAREST APPROACH TO CURLY HAIR IN THE SERIES. NOS. 2, 5, 11 AND 13 MAY BE REPRESENTATIVES OF A THIRD TYPE WITH SHORT HEADS, NARROW FACES AND NARROW NOSES.

Photographs by Handy and Linton.

12: Sullivan D-4 [no date] 1923 OX6 Marquesas OX6

[P. 116]

Lend plate 51

12 Bellows D-4 (no date) 1923 OXX Marquesas OXX

XVI
XXX
XIX

TYPES MIXED WITH CAUCASIANS AND ASIATICS. NOS. 1 TO 10 ARE ONE-HALF CHINESE. NOS. 11 AND 12 ARE ONE-QUARTER WHITE AND ONE-QUARTER TAHITIAN. NOS. 13 AND 14 ARE ONE-HALF ENGLISH AND NUMBER 15 IS ONE-HALF SPANISH AND ONE-QUARTER FRENCH. WHERE CAUCASIAN BLOOD IS PRESENT IT IS USUALLY APPARENT.

Photographs by Handy and Linton.

[P. 11]

[Col plate]

12: Sullivan
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OX6 Marquesas OX6

[For information on descriptive somatology, see category 116, pp. 155-162, 166-196, 234-247, end plates 1-6.]